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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

DISEASES PECULIAR TO CATTLE. REMEDIES.

To the Editor of the Farmers' Register.

Mobile, Nov. 4th, 1839.

DEAR SIR—In answer to your call for information, touching the diseases of cattle, following the communication of W. I. Dupuy; permit me to refer him and any others that may desire such information, to a treatise on cattle, written by W. Youatt, of London. The title page of the book is as follows: "Library of Useful Knowledge. Cattle, their breeds, management and diseases; with an index. Published under the superintendence of the Society for the Diffusion of Useful Knowledge. Philadelphia: Grigg and Elliott, 9 North Fourth Street, 1836." The title page is also embellished with a wood cut of the head of Firby, Lord Althorp's bull. I have been informed that a treatise on the horse, by the same author, has been republished in this country by the same publishers, as the one on cattle above referred to, but of this, I cannot speak positively, as I have not been able to obtain it. I have the treatise on cattle, and I have not a doubt that it is the best on that subject in the English language. It contains a fund of knowledge highly valuable to agriculturists, and to all such as take any interest in cattle. Mr. Dupuy remarks upon the diversity of opinion that prevails as to the nature and causes of the disease of which he is speaking. I am satisfied that the disease is *bilious fever* in its ordinary form; and when it assumes the character of an epidemic; attacking whole herds, it then answers to the more malignant forms of that disease, as the congestive fever and the yellow fever. The nature of the disease being understood, the causes that produce it may be the more readily perceived, and the remedies more appropriately employed. The causes are various, as are those that produce that disease in the human being, and act with greater force on cattle than man. Cattle are more limited in the kinds of food they take, they are more complicated in their digestive organs, less adapted to change of climate, and indeed change of any kind, they are of delicate constitution, and are consequently acted on with more force by causes that would disturb health, than man would be. Exposure to dry hot weather or hot wet weather, bad water, bad food, rich stimulating food, especially when the animal is fat and plethoric, a change of habit, consequent on a change of location and management; each of these and a hundred other causes might in their turn be rightly assigned as the proximate cause of the disease, so that it is not to be wondered at, that there are diverse opinions as to the cause. I have had several *post mortem* examinations of cattle that died with it, and found the liver enlarged, and the system generally suffused with bile, particularly about the region of the kidneys, they having a tendency to inflamation. I found the "manifold" in a greater or less degree of constipation, and the smaller intestines generally empty. These latter symptoms, the state of the kidneys, &c., are effects from the fever. I have learned too, from some intelligent butchers, that the enlargement of the liver and the general bilious symptoms are observable in very many of the western cattle that they kill, though there be no external indications of ill health; and as the warm weather approaches, they kill them off as fast as possible, knowing the risk they run by attempting to keep them.

The remedy is blood-letting, purging and dieting. Bleeding must be employed only in the early stages of the disease, and then largely—from one to two gallons, and more may be safely taken, according as the strength of the animal and the state of the pulse may indicate. The purging must be employed at all stages, till the constipation is overcome, and a free passage established. Be not deceived here, one symptom of the disease is a lax state of the bowels, and a frequent effort to void the feces while the "maniplies" is yet in a state of constipation. This accounts for the empty state of the smaller intestines that I alluded to above. One pound to one and a half of Epsom salts, dissolved in a little over its own weight of warm water, is a dose for a grown animal, and may be repeated in half pound doses every four hours, till it operates. I have given a quart bottle of castor, linseed, or sweet oil, as I had them convenient, at a dose, and continued with salts till they operated. But prevention is better than cure; then take care to know what were the habits and management and food of the animal previously, and depart as little from them as possible; keep it out of the hot sun, and if it goes out to graze only let it go in the cool of the day for a short time; let it have plenty of pure water, give it salt frequently and give it a moderate supply of food; aim not at keeping it fat, but only in living order. It were even better to be thin so it keep healthy, until it get acclimated. See that it ruminates, that it sweats at the nose, that the *feces* become not hard, dark and glazed, nor thin and in diminished quantities. Check the beginnings of evil by a timely dose of medicine.

My experience is, that all cattle, whether they come from the north or west, or from Europe, are equally subject to the disease; and those only survive that are treated with the strictest attention to their food, their drink, and the avoidance of exposure to the sun in grazing at large. Cows are more subject to sickness than bulls, the safest and cheapest way of improving a stock is by breeding on the native cows with imported bulls. But I designed to refer to a written treatise, instead of writing one.

Respectfully,

GEO. E. HOLT.

[We have long possessed the English edition of both the works referred to in the foregoing communication, and from one of them on "The Horse," made large extracts for republication in the Farmers' Register. They both are excellent treatises; and from the reputation of Mr. Youatt, the author, we have no doubt but that the portion

of the treatise on "The anatomical structure and diseases of cattle," is the best extant on that subject. But its arrangement is too scientific to suit ordinary readers, though it is therefore the best for those who desire to study the diseases of cattle systematically and thoroughly. On account of its regular order, the part on diseases cannot well be extracted from; each account of a disease and its remedy depending so much on the more general preceding parts. The whole ought to be given, if at all, together and in connexion; and this we would have done before this, but for the fear that so much on that subject would not be acceptable to our readers in general.—Ed. F. R.]

THE LONDON CATTLE MARKETS.

From Youatt's Treatise on Cattle.

When Smithfield was first appointed as the site of the periodical market for cattle, no better situation could possibly have been selected. It was without the walls of the city, it was a large uninclosed space, and would have held ten times the cattle that were sent there. There was plenty of room for them without their being cruelly packed together, and there was no inconvenience nor danger from driving them though the streets. In process of time, however, the field was encroached upon, and partly built over; and barely room was left for the accommodation of half the present number of cattle, and those of only half the size of the improved breeds. A dense population began to surround the field on every side, and it was necessary for the cattle to pass through the most crowded thoroughfares. Thence arose danger to human life, and many an act of cruelty to the poor beast; and not only so, but the most barborous expedients were resorted to to pack the cattle in the circumscribed space which was now left to them—barbarities which it would not be thought could be practised in a Christian country, if they were not authenticated beyond all doubt. We subjoin one statement of them; it deserves the attentive perusal of every one connected with cattle, and, we trust, will lessen the virulence with which some, more from an erroneous calculation of interest, than from an actual want of human feeling, oppose the removal of the cattle-market once more to the outskirts of the city, and the establishment of abattoirs or slaughter-houses there.

"In Smithfield market there is not room to tie up to the rails much more than half of the cattle sent there for sale! The remainder are disposed of by being formed, in groups of about twenty in each, into 'rings' or 'off-droves,' as such divisions are termed. About two o'clock in the morning the Smithfield barbarities are at the height, and the constables, being sent into the market in the daytime only, are consequently not in attendance. The drovers surround the unfortunate bullocks which cannot be tied up in the market, and commence by aiming with their bludgeons blows at their heads, to avoid which they endeavor to hide their heads, by keeping them towards the ground. On attempting to run backwards, the bullocks are restrained by blows upon their hocks and legs, together with the application of goads; whilst, if they venture to lift up the head, a dozen bludgeons are instantly hammering on it, until again lowered to the ground. This scene of barbarity is continued until every bullock, however refractory, obstinate, stupid, or dangerous at first, has been disciplined to stand quietly in a ring—their heads in the centre, their bodies diverging outward like the radii of a circle: this is done that they may conveniently be handled by the butchers. The barbarity of Smithfield is at its height during the night; but in the day time, by seeing the process by which one or more bullocks, when sold, are driven out of a 'ring' or 'off-drove'—and observing the hammerings with bludgeons on the head; the thrusting the goads into the nostrils of the animals to make them move backwards, after similar instruments had been applied to urge them in the contrary direction; by witnessing the mode of re-forming the 'rings' or 'off-droves,' which are constantly broken through by the withdrawment of purchased animals, as well as by the passing and repassing of carts and drays, some faint idea may be formed of the amount of needless barbarity inflicted, and of the consequent deterioration of the meat. The deterioration of the meat has been calculated at no less a sum than 100,000*l.* per annum, notwithstanding the care which the drovers take to strike chiefly where there is no flesh interposed between the skin and the bone; where the animal feels most acutely, but there is no black mark to tell tales. 'I have lived fourteen years in Smithfield,' said a very intelligent witness, 'and I find it perfectly impossible to sleep in the front of my house on the Sunday night. The cruelty practised upon the cattle, in beating them into the 'rings,' no person can believe who has not seen it; and, as it is a matter very easily to be seen, I hope some of the committee (now sitting) will see it personally. Supposing a salesman to have twenty beasts (which could not be tied up), he will have them all with their heads in and their tails out; they form a ring; and in order to discipline them to stand in that manner, the drovers are obliged to goad them behind and knock them upon the noses. They strike them with great force upon the nose, and goad them cruelly behind, by which means they form themselves into 'a ring;' so that, at the period I speak of, there is a great deal of unnecessary cruelty. At length the cattle will stand in that manner, so perfectly disciplined, that, at breakfast-time, there shall be twenty or thirty 'rings' of this kind standing in the middle of the market. If the 'ring' is broken by any means, they are all in the greatest anxiety to get in again; and when the drovers are obliged to separate these 'rings' and drive the cattle away, they have a great deal of trouble, and the labor of the men is excessive to get one single beast out. Indeed, if you can conceive first getting the cattle into 'a ring,' as I have stated, and if one is sold out of the ring at eleven in the day, the beast is ordered to be driven through fifteen hundred cattle, whichever way he goes out of the market, and the man is goading that beast all the way—if you can conceive men compelled to exercise this cruelty, they will not be very delicate of the manner in which they use it after a time!'

"Another witness, who had been 'a salesman about eight years,' thus described the scene:—

"'I have stood behind eight of these off-droves.

and the cruelty which is necessarily exercised to get them to stand properly is very great indeed, and which, by tying up, might be totally removed, and is the cause of the great complaint which exists of the bruised and the wildness of the different animals when passing through the streets. I will describe simply the manner in which it arises. Perhaps more than an hour's violence has been exercised towards the cattle, to get them to stand about twenty in each circle—and during the whole of this time they are beaten, now about the hocks, and then about the head. If the head turns outward, they are beaten about the head till they are turned inward. The great cause of the inhumanity described arises from this circumstance, that when a bullock is driven, perhaps from the centre of the market, by the butchers' drovers, that bullock will run into five, six, seven, eight, or nine of the droves before he gets out of the market: perhaps in every one of the droves that bullock is beat upon the head for ten minutes before he can be got out of it again, and then he runs to another drove, from the circumstance of having been so beat about in the early part of the morning. Consequently, perhaps, this bullock is beat out of ten droves before he gets out of the market, to the very great injury of the animal. He is often beaten nearly or quite blind; and when it gets into the public streets, the bullock, irritated by the violence committed, scarcely conscious where he is, runs at any thing, or over every thing, or through every thing. All this would be entirely prevented, if there were room to tie each bullock separately up.'"

We subjoin, in connexion with this, an account of an undertaking of an opulent and benevolent individual, Mr. Perkins, who, at the expense of 100,000*l*., has erected a cattle-market, in the Lower Road at Islington, which will contain double the number of cattle usually exhibited in Smithfield, and render the cruelties there practised in the packing of them, no longer necessary. The building, so far as it has proceeded, was first thrown open to the inspection of the public, on the 13th of Sept., 1833.

"The new mart stands upon an area of 22 acres, immediately abutting upon the Lower Road, Islington. The situation is airy and healthy, and is peculiarly appropriate for the purpose, as it is on the high road for the northern and eastern parts of the country, whence the principal supply of cattle for the London market comes. An immense square is enclosed by high walls, around which are erected a continuous range of slated sheds, supported by 244 Doric pillars, under which the cattle may at all times be protected from the severity of the weather. These sheds are subdivided into numerous compartments, with lairs enclosed by oak paling in front, to which the beasts may be either fastened, or allowed to be at liberty, so as to be conveniently subject to the examination of the purchasers. In each lair their is a water-trough, constantly supplied with fresh water, by means of pipes passing underground, from two immense tanks, which are kept filled by machinery from capacious wells which have been sunk for the purpose. The average length of the sheds is 830 feet, and they are capable of accommodating at least 4,000 beasts, and here they may remain from one market-day to another, or till such times as it may be convenient for the purchasers to remove them—an advantage wholly impracticable at Smithfield.

"The open space in the centre is divided into four quadrangles, intersected by wide passages, and in these quadrangles are to be erected sheep-pens (the materials for which are all ready), capable of holding 40,000, so placed as to be approached with perfect facility. Other pens are constructed for calves, pigs, and such animals as are usually brought for sale at the cattle-market, upon an obviously simple classification, so as to avoid confusion or irregularity of any sort.

"Every necessary office for salesmen and clerks of the market will be erected in a large area in the centre, and the ingress is obtained through a large arched passage under the market-house, a fine substantial building, with appropriate offices on each side for check-clerks, and with accommodation up stairs, either for the counting-houses of bankers, or public meetings connected with the business of the establishment. To the leads of this house the visitors proceeded, and from thence a full view of the whole market was obtained, as well as of the surrounding country; at once showing the perfect appropriateness and unobjectionable character of the site, which, in point of extent, is four times larger than Smithfield. The piers and layers are all to be paved, if we may use the expression, with hard bricks; and the drainage is so contrived as to ensure perfect cleanliness in the most unfavorable weather.

"*Abattoirs.*—Adjoining the market it is intended to erect abattoirs for slaughtering cattle of every description; in which persons may either be accommodated with private slaughter-houses, or have the animals slaughtered under appointed inspectors at a certain fixed and moderate rate; so that all the expense, inconvenience, and mischief arising from the present mode of driving the cattle through the crowded streets on the market-day may be avoided.

"A market tavern, with stable-yard, stables, and sheds, capable of accommodating the horses of the frequenters of the market, is also to be erected, together with a range of shops for the sale of such things as are calculated to meet the wants of the various classes who may be drawn to the spot by their respective avocations. Every possible want has in fact been foreseen; and, as the place is now open for inspection, the public have an opportunity of judging of its utility by personal observation."

THE LONDON DAIRIES.

From Youatt's Treatise on Cattle.

The dairies of the metropolis are objects of much interest to the stranger and to the agriculturist. In pursuit of the object of this work, we travelled over the greater part of the United Kingdom; and although we often had no other recommendation than the simple statement of the purport of our journey, we met with very few cases of incivility or of unwillingness to give us the fullest information; but when we returned to our usual residence, and where we expected most facility in the attainment of our object, we will not say that the refusal to admit us was accompanied by rudeness, but the gate of the dairy remained closed. This was the case with our overgrown milk establishments. It was a species of illiberality on which we had not calculated; but it mattered little, for we had seen

many of the smaller ones, and we could guess with tolerable accuracy at the difference of treatment in some points—indeed they had been already whispered to us, and we had besides a minute and accurate account of them in the Magazine of our friend Mr. Berry.

The number of cows kept for the purpose of supplying the inhabitants of the metropolis and its environs with milk is about 12,000. They are, with very few exceptions, of the short-horn breed —the Holderness or Yorkshire cow, and almost invariably with a cross of the improved Durham blood. The universal preference given to this breed by such a body of men, differing materially on many branches of the treatment of cattle, is perfectly satisfactory as to their value, and that on three distinct points.

First, as to the quantity of milk. This we need not press, for the enemies of the short-horns have never contested this point. There is no cow which pays so well for what she consumes in the quantity of milk that she returns.

This, however, is not all, though it may be the principal thing which enters into the calculation of the metropolitan dairymen.

The name of the new milk has something very pleasant about it, but it is an article which rarely makes its appearance at the breakfast or tea table of the citizen. That which is got from the cow at night is put by until the morning, and the cream skimmed off, and then a little water being added, it is sold to the public as the morning's milk. The real morning's milk is also put by and skimmed, and, being warmed a little, is sold as the evening's milk. This is the practice of most or all of the little dairymen who keep their half a dozen cows; and if this were all, and with these people it is nearly all, the public must not complain: the milk may be lowered by the warm water, but the lowering system is not carried to any great extent, for there is a pride among them that their milk shall be better than that of the merchants on a yet smaller scale, who purchase the article from the great dairies; and so it generally is. The milk goes from the yard of the great dairy into the possession of the itinerant dealers perfectly pure; what is done with it afterwards, and to what degree it is lowered and sophisticated, is known only to these retail merchants.

The proprietor of the large dairy is also a dealer in cream to a considerable extent among these people; he is also a great manufacturer of butter, for he must have milk enough to answer every demand, and that demand is exceedingly fluctuating; then it is necessary that the quality of the milk should be good, in order that he may turn the overplus to profitable account, in the form of cream or butter. The employment of the short-horn cow, in all the dairies, is a convincing proof that her milk is not so poor as some have described it to be.

It is the practice in most of the dairies to fatten a cow as soon as her milk becomes less than four quarts a day. They are rarely suffered to breed while in the dairyman's possession. The fact of their being so often changed is a proof that while the cow gives a remunerating quantity of milk for a certain time, she is rapidly and cheaply fattened for the butcher as soon as her milk is dry. Were much time or money employed in preparing her for the market, this system would not answer, and would not be so universally adopted. Fattening and milking properties can, therefore, combine in the same animal, and they do so here.

Mr. Laycock, however, does not adopt this as a general rule. The cows that are more than usually good milkers are suffered to take the bull when in season. He always keeps some good short-horn bulls for this purpose. It sometimes happens that the cow will continue to give milk until within a few weeks of calving; and he judges, and perhaps rightly, that this is a more profitable course than to fatten and get rid of her, with the probability that he might replace her by a cow that would give a less quantity of milk.

The present market-price of a good dairy cow is about 20*l*., but the owners of the small dairies have no little trouble to get a good cow. The jobbers know that they will have a ready market for a considerable portion of their lot in the yards of the great cow-proprietors, and will probably get a larger price than the poorer man would give; and therefore Messrs. Rhodes, or Laycock, or one or two others, have always the first selection. Mr. Laycock has peculiar advantages for obtaining good cattle. In addition to his dairy, he has sheds that will contain five or six thousand beasts. A great proportion of them halt on his premises for a day or two before they are brought into the market. In addition to the shilling a night which he charges for their standing, he claims the milk of the cows as his perquisite. The cows are milked by his people; he therefore knows beforehand the quantity of milk which each will yield, and he is thus enabled to cull the very best of the herd. The dairymen do not like a cow until she has had her third or fourth calf, and is five or six years old; she then yields the greatest quantity of milk, and of the best quality. Two gallons of milk per day is the quantity which each cow is expected to yield in order to be retained in the dairy. Taking one cow with another, the average quantity obtained is rather more than nine quarts.

When she begins to fail in her milk, she is fattened on oil-cake, grains, and cut clover hay, and disposed of. The dairyman calculates on getting something more for her than when he first bought her, but sometimes he meets with an animal that seems to verify the old prejudice against cows in good condition. He bought her for known milking properties, but she continues so poor that he in a manner hides her in some corner of his dairy. She, however, does her duty; she yields him plenty of milk, but that at length dries up; and he is unable, try what he will, to get much flesh upon her bones, and he sells her for less than half of her first price.

The quantity of milk yielded by all these cows, at 9 quarts per day, amounts to 39,420,000 quarts, or 27 quarts of genuine milk for each individual. The retail dealers usually sell the milk for 4*d*. per quart, after the cream is separated from it, and then obtain 3*s*. per quart for the cream; beside this, a great deal of water is mixed with this skimmed milk: so that we far underrate the price when we calculate that the genuine milk sells at 6*d*. per quart, which makes the money expended in milk in the British metropolis amount to 985,500*l*. or nearly a million pounds per annum.

If we again divide the 985,500*l*. by 12,000, (the number of cows,) we shall have the strange and almost incredible sum of more than 82*l*. as the money produced by the milk of each cow. This

is divided among a variety of persons, and after all affords but a scanty subsistence to many of them; but it unequivocally proves the rascality that pervades some of the departments of the concern.

We acquit the wholesale dealers of any share in the roguery, nor do we believe that their profits are exorbitant. They sell the milk to the retail dealers at a price that, according to Dr. Middleton, would enable them to clear 64 per cent., without adulterating the article—(we believe that 50 per cent. would be nearer the truth.) When we consider the nature of the business; the distance the milk-girls have to travel; and the time wasted in selling their little quantities from door to door, this profit is not too great; but when they abstract the cream, and add the water, and, unless they are much belied, some extraneous and abominable articles, the actual profits will far exceed cent. per cent. In the spring of the year, when London is full, the consumption and the deterioration are greatest. In the latter part of the year the cream is converted into butter, and the butter-milk given to the hogs.

Rhode's dairy has been established more than thirty years, but some of the same family or name have lived in that neighborhood nearly a century. 'Mr. Rhodes, farmer, near Islington,' is referred to by Dr. Brocklesby, in his treatise on the murrain which prevailed among cattle about the middle of the last century. The writer of 'London Dairies,' in the 'British Farmer's Magazine' for February, 1831, gives a description of it, of which the following is the substance:—The surface on which the buildings are placed is a gentle slope of two or three acres, facing the east. The sheds run in the direction of the slope, as well for the drainage of the gutters as for the supply of water for drinking, which will thus run from trough to trough the whole length of the shed. The sheds are twenty-four feet wide; the side-walls being about eight feet high, with rising shutters for ventilation, and panes of glass let into iron frames for light. The floor is nearly flat, with a gutter along the centre, and a row of stalls, each seven feet and a half wide, along the sides, and adapted for two cows, which are attached by chains to a ring that runs upon an upright rod in the corner of the stalls. A trough or manger, of the ordinary size of those used for horses, is placed at the top of the stall. Four of these sheds are placed parallel and close to each other, and in the party-walls are openings a foot wide, and four feet high, opposite to each cow. The bottom of these openings is about nine inches higher than the upper surface of the troughs, and contains a one-foot square cast-iron cistern, which contains the water for drinking; each cistern serves for two cows that are placed opposite to each other, but in different sheds; all these cisterns are supplied from one large tank. These cisterns have a wooden cover, which is put on while the cows are eating their grains, to prevent their drinking at that time, and tainting the water by dropping any of the grains into it. At the upper end and at one corner of this quadruple range of sheds is the dairy, consisting of three rooms, each about twelve feet square; the outer, or measuring-room—the middle, or scalding-room, with a fire-place and a boiler—and the inner, or milk and butter room.

At the lower end of the range is a square yard surrounded by sheds, some for fattening the cows when they have ceased to give milk, and the others for store and breeding pigs. The pigs are kept to consume the casual stock of skim-milk which remains on hand, owing to the fluctuations of the demand. The milk is kept in a well, walled with brick laid in cement, about six feet in diameter, and twelve feet deep. The milk soon becomes sour there, but is then most nourishing to the hogs. Breeding swine is thought to be the most profitable, and the suckling pigs are sold for roasting.

Beyond this yard is a deep pit or pond, into which the dung is emptied. There is a stack-yard, sheds, and pits for roots, straw, and hay; a place for cutting chaff, cart-sheds, stables, and every building which such an establishment can require. The number of cows varies from four to five hundred.

The treatment of the cows is singular in some respects. The cows are never untied while they are retained as milkers. Some of them have stood in the stall more than two years. Mr. Laycock, on the contrary, turns his cows out once every day to drink from troughs in the yard, and they remain out from half an hour to three hours, depending on the weather and the season of the year. From the end of June until Michaelmas, they are turned into the fields from six o'clock in the morning until twelve or one, and from two o'clock in the afternoon till about three o'clock on the following morning. Mr. Rhodes's cows have always water standing in the cisterns before them.

We can readily conceive that, from the want of exercise, and consequent cutaneous perspiration, Rhodes's cows may give a somewhat greater quantity of milk than Laycock's; but on the other hand, when we think of an animal tied in the corner of a stall for twelve, or eighteen, or twenty-four months together, we cannot help associating the idea of disease, or tendency to disease at least, with such an unnatural state of things; the feet and the digestive system would particularly suffer, and we should suspect a little vitiation of all the secretions, and some deterioration in the quality of the milk. We should like to know the comparative state of health of the animals in the two establishments. The inclination of our opinion would be strongly in favor of Mr. Laycock's plan.

The principal food of the cows in both of these, and in all the dairies of the metropolis, is grains; and as the brewing seasons are chiefly in autumn and spring, a stock of grains is generally laid in at those seasons for the rest of the year. The grains are laid up in pits, lined with brick-work set in cement, from ten to twenty feet deep, and of any convenient size. They are firmly trodden down, and covered with a layer of moist earth, eight or nine inches thick, to keep out the rain and frost in winter, and the heat in summer. A cow consumes about a bushel of these grains daily, the cost of which is from fourpence to fivepence, exclusive of carriage and preservation. The grains are, if possible, thrown into the pit while warm and in a state of fermentation, and they soon turn sour, but they are not liked the worse by cattle on that account; and the air being perfectly excluded, the fermentation cannot run on to putrefaction. The dairymen say that the slow and slight degree of fermentation which goes on, tends to the greater developement of the saccharine and nutritive principle, and they will have as large a stock upon

hand as they can afford, and not open the pits until they are compelled. It is not uncommon for two years to pass before a pit of grains is touched; and it is said that some have lain nine years, and been perfectly good at the expiration of that period. The dairyman, however, must know his brewer, and be able to depend on him. The grains from a large ale brewery are the most nourishing. Those from the porter brewery are not so good; and those from the little brewers, who first draw off their ale, and afterwards extract every particle of nutriment in the formation of table beer, are scarcely worth having.

Each cow is allowed a portion of salt. In Rhodes's establishment it is given with the grains. Laycock salts his rick when it is first made—a most excellent plan, for the hay is not only effectually secured from becoming mow-burnt or mouldy, but it is rendered more grateful to the animal, and we may venture to say, almost doubly nourishing, from the developement of the saccharine principle. It is to be doubted, however, whether the cows obtain a sufficent quantity of salt in this way. Some should be given with the grains.

The grains are usually given about three o'clock in the morning, and two o'clock in the afternoon, being a little before the usual milking hours. Between the milkings they have green meat, as long as the season will permit. Cut-grass is a favorite and excellent food; but where it can be managed, the plan of Mr. Laycock to let the cows cut the grass for themselves is a far superior one. Tares come in before the grass, and are afterwards given alternately with it. In winter, turnips, potatoes, and mangel-wurtzel, are given as long as they can be obtained at any reasonable price; and then the dairyman is driven to hay or chaff: the superiority of chaff is now generally allowed.

Both of these gentlemen fatten off their dry cows with grains, oil-cake, and clover chaff, to which Mr. Laycock adds boiled linseed. Our readers may recollect the experiments made by the Duke of Bedford on the fattening quality of linseed, boiled and unboiled, and in which the simple unboiled linseed fattened the animals more expeditiously than any cooked preparation of that seed. Mr. Laycock boils the linseed in a common boiler, and when reduced to a pulp, conveys it by tubes into large wooden cisterns, where it is mixed with clover chaff roughly cut, and sometimes with grains.

These wholesale dairymen usually agree with the retail dealers. that they (the dealers) shall milk the cows. The dealer knows the quantity of milk that he wants, and the dairyman knowing the usual quantity of milk yielded by each cow, calculates what number of cows will meet the demand, and the retail dealer attends at three o'clock in the morning and two in the afternoon, to milk these cows. He carries it into the measuring-room, where its precise quantity is ascertained. If, as cows often vary considerably in their flow of milk in the course of two or three days, he has milked more than his quantity, it is put into a vessel belonging to the dairyman; or if the cows should not have given their usual supply, the deficiency is made up from the dairyman's vessel. The milk which is left on hand is put into shallow vessels, the cream skimmed and made into butter, and the skimmed-milk thrown into the pit for the hogs.

The joint-stock dairies, which a few years ago sprung up in such abundance, have either ceased to exist, or the number of cows, much diminished, have fallen into private hands. While there were many partners, and the business was controlled by a committee of persons who knew nothing at all about the matter, they all proved to be lamentable failures. Some of them, even in the hands of private individuals, who brought with them little or no experience, were sadly ruinous concerns. The Metropolitan dairy was a striking illustration of this; but now, under the management of those who have been drilled into the business, it is doing better.

THE INCREASE OF INSECTS CAUSED BY THE NON-GRAZING SYSTEM.

To the Editor of the Farmers' Register.

Shirley, November 20, 1839.

I have been thinking for some time of writing something on the subject of the great increase of insects in our country, and particularly where the non-grazing system has been pursued for any length of time, as it has been with me in the four-shift system. I am now convinced that no system will answer in our warm climate without tolerably close grazing. The insects become so numerous, that unless you have the most favorable seasons, your crops are very seriously injured by them. I believe that if we could always have favorable seasons, that is to say, if in the spring and fall we could have mild, moist weather, with frequent rains during summer, so as to give the crops a good start, and keep them growing, our crops, under the four-field system on good land, would bid defiance to insects, such is the increased fertility produced by the system. But our springs and falls are so frequently cold and dry, and summers subject to great droughts, that the crops are checked, and then the insects destroy them, or injure them very seriously, on the very best land.* I was always under the impression that partial grazing was necessary for success in cropping, but I was not aware until lately, that it required so much, and such close grazing in our country, to keep under insects; and with close grazing the four-field system will not answer, for the success of it depends entirely on a good clover lay for fallow, once in four years, both to give, and keep up the fertility of the land.

I am confident under the four-field system pursued by me for 20 years past, my land has increased four-fold in fertility; but in consequence of the non-grazing, or very partial grazing, the insects have multiplied an hundred-fold, or perhaps I might justly say one thousand-fold; and so numerous have they become, that I find my crops on highly improved land have become very precarious in consequence; therefore I have determined to change my system to one which will allow of close grazing; and I do not know of any one which will answer so well as a five-field rotation, which I mean therefore to adopt. As a proof of the fertilizing power of the four-field system pursued by me, I will mention that I have for many years

* Insects do very little injury in favorable seasons, because there is then sap enough to feed the insects and make the crop, but we much more frequently have dry and bad seasons, and then the insects do great injury.

past turned under heavy lays of clover, and weeds, on land that 20 years ago would not yield clover at all, so reduced was it by bad cultivation; but notwithstanding the fine clover lays, the crops, if the season should be a bad one, are not as good as they ought to be, in consequence of the depredations of insects, and I must reluctantly abandon my favorite system. I find that the marled and limed lands are much less subject to injury from insects; but grazing is nevertheless indispensable to get rid of them, and I fear it will require very rigid grazing.

My wheat was sown this fall on a very fine fallow of clover, part of it highly manured, and part marled, and I had a right to calculate on a very heavy crop; but the clover worm has committed sad havock already, and must lessen the crop very materially. I propose converting my standing pasture into a fifth field, and grazing the field to be fallowed, very closely, every fifth year. That is to say, I shall let the land remain two years in clover; the first year not to be grazed at all, as an improver, but the second year to be closely grazed, and then fallowed for wheat, then followed by corn, then by wheat again, and then laid down in clover to remain two years, &c., as before, viz., clover, clover-pasture, fallow-wheat, corn, wheat. This system has the objection of three grain crops in succession, but no system is entirely free from objections, and it has been practised in many parts of our country with great success for some time, and I am told is not very liable to insects, which is the great evil with me now.

I have thought it necessary to write this to warn those who may have adopted the four-field system with standing pasture and non-grazing, or very partial grazing, which I recommended in several communications to the Farmers' Register. There is no doubt that the above four-field system will increase the vegetable matter in the land most rapidly; but the increase of insects caused by increase of vegetable matter in our hot climate, will do away the benefit of increased fertility in a very great degree without close grazing, or some other means of getting rid of them.

Yours most respectfully,

HILL CARTER.

LETTERS FROM A YOUNG FARMER TO MR. JAMIESON.

Class III.

(Concluded from page, 678.)

From the Edinburgh Farmer's Magazine.

August 5.—I am favoured, my dear Sir, with your obliging letter of 2d instant, which adds to the numerous obligations already conferred upon me. You hint the propriety of seeking after a regular housekeeper, now when I am fairly settled in the farm; and forcibly urge the manifest advantages of the matrimonial state to every man possessed of a house, and capable of supporting a wife and family in a suitable manner. Though I have not the slightest cause of dissatisfaction with my sister, who enters into all my views with spirit and alacrity, yet it must be confessed, that I have some thoughts of giving her an opportunity of returning to my father and mother. As you justly observe, no woman whatsoever can manage a man's household affairs with the like frugality as she with whom he is legally connected for life. When called from home, he can with confidence reflect that his house is under the management of one who is equally interested with himself in its prosperity; and he may be satisfied, that though all the rest of mankind forget him, there is still one individual who thinks of him with pleasure, and looks for his return with heartfelt anxiety. You also remark, that many unmarried farmers have been plundered by those to whom their household affairs were entrusted; and quote several instances, some of which are not unknown to me, of persons so circumstanced being thereby brought to the gates of ruin. Your advices have therefore made a deep impression, and probably may occasion a disclosure of my sentiments at an earlier period than once intended. I refrain from saying more at this time on such an important subject, fondly hoping, when my sentiments are disclosed, that they will not be disagreeable to you.

I mentioned, in my last, that the fallow field of thin clay soil was dunged and seed-furrowed for wheat; and can now acquaint you, that the whole fallows have received dung, and that we are busily engaged in ploughing it down, an operation undoubtedly of great importance. The dung, as measured in June last, when the arbiters settled matters betwixt my predecessor and me, was reported to consist of 960 cubic yards, which, according to the common understanding, ought to have loaded 640 double carts. I found, however, that it was taken out by 548 carts, which was nearly at the rate of one cubic yard and three quarters per cart. As fifty cart-loads of decent dung were made by soiling through the summer, the quantity applied to the turnip and fallow land appears to be nearly twelve carts per acre on an average. The greatest part of the dung, however, was so well rotted, that my father assures me the land is sufficiently manured. He seem hostile to an overdoze alleging, that such is as detrimental to the soil as a surfeit of food is to the human body. I took particular care to have it well spread, having learned, when under your inspection, the great benefit arising from separating the parts in the most minute manner.

As the dwelling-house needed some repairs, I have lately gutted a part of it, and made a new room, twenty feet by sixteen, which will enable me to receive my friends, with comfort to them, and satisfaction to myself. When you come over, we will *heat* the new room, at which time my father promises to see me. You and he have been so intimate for such a length of time, that a meeting cannot fail on both sides to be highly agreeable.

August 30.—The crops on this farm are not amiss; and a part of the wheat is already cut. My predecessor has taken a house in the neighborhood, so as he may be at hand to superintend his harvest-work; and, having an overseer to look after the reapers, is not by any means confined to the field. The cutting is not so good as I could wish; there being, in my opinion, not less than fifty stones of straw left upon each acre of wheat, which, of course, will lessen the quantity of the dung on the farm next year considerably. I have heard it remarked, that fifty stones of straw will make two cubic yards of dung, if properly manu-

factured; so the loss, by this high cutting, will not be a trifling one. Many proprietors are careful that the land, in the last year of the lease, should be cropped in a regular manner; and so far they are in the right:—but none of them, to my knowledge, have ever prescribed any regulation, or interfered in the slightest manner concerning the cutting of that crop, though a great and serious injury may evidently be sustained by the new tenant, when the crop is cut in a slovenly or imperfect manner. I spoke to my predecessor on that subject; but his reply was, that his interest went no further than cutting the whole corn, and, so far, he would take care of the reaping; but, as for cutting by the ground, which would add five shillings per acre to the expense, that was no part of his business. As matters stand, I believe he is in the right; therefore think, without a special clause in leases, such an abuse stands a chance of being continued, notwithstanding of its injurious consequences to the cause of agriculture.

The fallow fields being all seed-furrowed, I have set the carts to driving lime for one of the clover fields, and expect to finish it before seed-work commences. I am still giving the horses one feed, or six avoirdupois pounds, of oats per day, finding it impracticable to carry on work in a business-like manner without that assistance. Since my entry at Whitsunday, the ten working horses have consumed forty-eight bolls of oats. The first five weeks, they were fed three times a day; the next four weeks, twice a day; and afterwards received only one feed. I paid, on an average, twenty-seven shillings per boll for the oats, which amounted to sixty-four pounds sixteen-shillings. This, to be sure, is a heavy charge; but, without bearing it, I must either have run down my stock, or executed the summer-work of the farm imperfectly. Under this expenditure, I have turnipped and summer-fallowed fifty acres of land in a satisfactory manner, besides driving a considerable quantity of lime; therefore, do not grudge the expense which has been incurred.

The grass land did very well, having been saved till a full bite was obtained. This mode of management is undoubtedly most commendable,—serving to cover the surface, and thereby to benefit the soil, whilst, at the same time, it is the alone best way of bringing forward the bestial thereupon depastured. The ten highland cattle received from my father are already sold; and the country beasts purchased at the markets are in a thriving condition. I have thoughts of disposing of them to some of the turnip feeders, considering that my twelve acres of turnips and ruta-baga will be better appropriated to the support of winter ewes and cattle, then to the feeding of these beasts. I purchased, at different times, a score of country cattle; and suppose, at Michaelmas, that, one with another, they may yield a profit of three pounds per head, having constantly had a full supply of food.

Till last week, I had not the slightest dispute with any of the servants; but an altercation then ensued, which required a strong measure to be used without delay. One of the ploughmen, whose physiognomy displayed evidence of a sulky temper, was beating his horses with the plough-staff when I came upon the field. He desisted from such barbarous usage upon getting a sight of me; but, being resolved to check the first appearance of a practice which cannot be too severely censured, I went up to him, and calmly inquired why he presumed to beat my horses in that manner? He insolently replied, that he would thrash any man's horses, even those of the King himself, were they not obedient to his orders. Will you do so my good fellow? Then I must tell you, that you are not to remain in my service a moment longer. Unyoke the horses, and take them to the stable. That I will says he; but I hope you will pay me my wages. Yes, for the time you have served me, provided you instantly leave the place, with bag and baggage. I gave the horses to one of the labourers for a day or two, till another ploughman was engaged; and I am almost certain, that the example made will be attended with beneficial consequences, as the fellow hitherto has not procured any employment. Indeed, when the purchase and keep of horses is so great, no man whatsoever ought to receive employment as a ploughman who uses these animals in an improper manner.

September 12.—The fallowed field of thin clay soil, containing fourteen Scotish acres, was sown a few days ago with ten bolls of excellent wheat, purchased, according to your recommendation, from the celebrated Mr. Hunter,—a gentleman who, perhaps, has paid more attention to the breeding of seed-wheat than any other agriculturist in the Island. The pickling process, upon which, you always told me, much depended, was conducted with the greatest attention. I previously provided a considerable quantity of stale urine, and hot limeshells fresh from the kiln. After wetting the grain completely with the urine, we riddled so much newly slaked lime upon it as to dry up the moisture. Then, turning the heap, and mixing the whole sufficiently, the grain was put into two carts and carried to the field, where it was sown with the utmost expedition. We entered early in the morning to work, and finished the field without unyoking the horses. The fourteen acres took twelve hours work of ten horses to give a double time of the harrows in length, a double time across, and a single time in length as a finisher. The field was also water-furrowed before we left it; and I fed both men and horses upon the ground, otherwise it would have been impracticable to have got through more than two thirds of the work which was executed. Next day, the whole headland and *gaw*-furrows were spaded and shovelled; and it was well that these operations were speedily performed, as, yesterday, a great deal of rain fell, and put the ground into such a condition, that I suppose neither ploughs nor harrows can be yoked for several days.

My predecessor had got up six stacks of wheat and two of potatoe oats before the rain fell; but when he will get more into the yard, is a problematical circumstance. I gave him two days of my carts, and am resolved to assist him, so far as in my power, till the whole crop is harvested. None of the stacks were covered when the rain arrived, though he immediately set about that necessary operation, which, to say no more, can never be well executed, except when the weather is calm and dry. A waygoing tenant is certainly exposed to many inconveniences when harvesting his last crop. He is rarely on the spot himself, and seldom provided with the best set of hands for performing the several branches of harvest work.

To cover a stack in a neat and sufficient manner, requires a servant of more than ordinary abilities; and it is hardly to be expected that such will be found amongst the common tribe of harvest workers. In short, the evil can only be remedied by stipulating, in the lease, that the waygoing crop is to be taken at a fair valuation by the landlord, who, of course, when he sets the farm, will transfer the obligation to the incoming tenant.

Here, I am aware, it may be objected, that a burden would be thrown upon the landlord, or the person who stood in his shoes, and that the advantage would be entirely on the side of the waygoing tenant. To this, it may be answered, that neither loss on the one side, nor advantage on the other, could possibly happen, were such valuations conducted upon proper principles. Hitherto, to take corn upon valuation, has constantly been not only a troublesome, but also a losing business. These circumstances entirely proceeded from no allowance being ever made for trouble and risk, and very often from valuing a whole crop at the average fiars—a rate of price never obtained on the best of farms. It is plain, that the man who undertakes the trouble of managing the harvest operations of a farm, is entitled to an allowance on that account, and likewise to a certain *per centage* for risk, &c. otherwise he must necessarily be a loser when the business is winded up. Notwithstanding, it is quite fair that such allowances should be made, I never heard of the slightest notice being taken of them when a corn crop was valued. The arbiters value the whole crop upon the ground, and, when the straw is not steelbow, usually allow it for the expenses of harvesting, thrashing, and marketing; which allowance is certainly far below the mark, when the enormous trouble of harvesting a crop, and the risks run before it is converted into money, are fairly considered; but even in instances where harvesting, thrashing, and marketing, have been suitably estimated, the smallest allowance has not been granted for trouble and risk, though, perhaps, the farmer, who, in these respects, occupies the shoes of another person, would not be overpaid were ten shillings *per* acre decerned to him on these accounts.

I have got in six score of ewes for wintering upon the farm. They are got at this early period with a view of putting them in good condition before the tups are admitted; and this, it is proposed, shall not take place sooner than five weeks from this date, so as lambs may be obtained about the end of March. These ewes are of a mixed breed —a dash of the Northumberland with the Cheviot; and promise, with Leicester tups, to produce lambs of good size and quality for the butcher. I am giving them a clover stubble at this time, and intend to allow a wider range afterwards. Very probably they will be removed into one of the old pasture fields about the end of January, when the clover stubbles are ploughed, where they will receive turnips, and remain till the lambing season. I mean then to give them young grass, as being the alone best method of feeding good lambs, though very likely turnips and ruta baga may be continued so long as these crops are unconsumed, there being no other way of making the young grasses carry on a stock in April and May, adequate to what they are capable of supporting through the summer season. My father strenuously recommends the ewe and lamb trade to me; and maintains, that no other mode of consuming grass can pay the farmer so handsomely, so long as existing circumstances continue.

October 6.—The wet weather mentioned in my last continued for eight days, and occasioned a considerable expense to my predecessor, who had sixty or seventy people to maintain, without obtaining, any work of the slightest consequence from them. Repeatedly, betwixt showers, the reapers were taken to the field, and as often returned, after perhaps working for an hour, and being drenched to the skin; which, of course, was a double loss to him. He took considerable care to keep the cut corn upon its foot, which undoubtedly was an useful measure. I observe some of it, however, to be sprouted, especially the head sheaves; indeed, no care can prevent a circumstance of that kind from occurring, when such a length of adverse weather prevails. The weather settled about the twentieth of the month, when some fine equinoctial gales came on. A day or two passed before any thing could be done with the cut corn; but the moment it was dried externally, my predecessor set his whole reapers to opening the sheaves, and very soon got a considerable quantity ready for the stack. As all my carts were at his command, the fields were soon cleared; and the weather continuing good, the remainder of his crop was afterwards cut, and in due time safely deposited in the stack-yard.

The whole of his stacks are now completely covered, and the yard makes a very decent figure as to size, notwithstanding of the high cut which most of the crop received. At the same time, I am sensible that, had he cut as you do, seven or eight stacks more might have been put up. However, this loss must be submitted to; though next year, I hope, the crop shall be cut in a very different manner. I am happy, however, to see so much bulk, when the work was so imperfectly executed.

The remainder of the summer fallow was yesterday sown with wheat, part of which I purchased from my predecessor; and as it seems to be of a different kind from the one you recommended, I will have an opportunity of judging next year of the merits of both respectively. I noticed, however, when it was in ear this summer, that a vast number of *blacked* heads, something like what often appears amongst barley, was amongst it. Perhaps one ear in ten was in this imperfect, or rather useless state; and of course, I apprehend this variety will be comparatively unproductive. It shows, however, a good sample, seems to yield more straw than any other, and probably may make up, in these respects, what it apparently wants in others.

I have sold the country beasts purchased at the summer markets, and have netted exactly three pounds ten shillings upon each beast, which you will allow is a very decent profit, to speak in the language of Northumberland. I am going to Falkirk in a few days to purchase thirty-five stots, if they can be got, thinking them to be the best sort for wintering in the straw yard, receiving a few turnips and ruta baga in March, April and May, and soiling afterwards. I know you always recommend beasts for soiling to be in good condition before the grass season; therefore trust my plan will meet with your approbation. If you are at Falkirk, I will be happy to receive your advice and assistance.

October 28.—Wheat seed is now finished with me for this season, having sown altogether sixty-eight acres, viz. thirty-eight acres upon land that had been summer-fallowed, and thirty acres that had carried peas and beans to my predecessor. I had an intention of trying ten or twelve acres of clover stubble; but after hearing my father's opinion upon that point, gave up all thoughts of attempting wheat thereupon, as he thinks oats to be a more certain, and, at all events, as valuable a crop. He urges, that clover stubbles seeded with wheat are constantly in bad condition after the crop is reaped; whereas, when seeded with oats, a good crop may not only be expected, but, what is of greater importance, the ground will always be found in order for carrying peas and beans as a preparatory crop for wheat. These reasons induced me to change the resolution originally formed, though I mean to sow with wheat in the spring all the land cleared of turnips before the first of March. I will, however, sow our usual autumn wheat, having no favor for the new kind of spring or summer wheat so keenly recommended by that respectable gentleman, Sir John Sinclair, Baronet. I am satisfied our climate does not suit that variety. It may do in Sicily or Egypt, but will not answer in this country. From a conversation the other day, with that excellent and assiduous agriculturist, John Christian Curwen, Esquire, President of the Workington Agricultural Society, I noticed, with pleasure, that his sentiments respecting spring or summer wheat, are precisely the same with what I have formed on the subject. Mr. Curwen has tried this newly introduced variety to a great extent; therefore is a competent judge upon its utility. In fact, the variety seems to be recommended as a *succedaneum* for barley after turnips, now when the culture of that valuable grain—valuable certainly upon light soils—is discountenanced by the legislature of the country.

I was sorry that you was not at Falkirk, as expected. I purchased there thirty very good Fife three-year-old stots, which probably may feed to forty stones Amsterdam, or thereby. I intend, after the stubbles are ranged, to give them straw till the middle of February or so; after which, they shall receive a tasting of turnips and ruta baga. Of my twelve acres of these roots, I am almost sure that six acres will fully supply the ewes; therefore, the remainder will be of great advantage to the cattle. I shall take care to proportion the quantity in such a way, as that the ruta baga may last to the first of June, when cutting grass is to be expected.

Since wheat seed was finished, I have entered upon the fields, intended next year for turnips and ruta baga, giving them a deep furrow, in imitation of your practice. I mean, next, to plough the bean land, though I am not resolved whether to give a cross furrow, or to gather up the ridge. Could a good spring season be depended upon, I would adopt the last method, and give the cross furrow previous to the seed one. Perhaps it may be best to try both ways, as, by acting in this manner, there is a chance of being more successful, than by exclusively adopting either the one or the other mode.

The horses are now put upon hay and corn, and are in good spirits. My predecessor speaks of not intending to thrash any of his peas and beans till after Martinmas; so I must keep to hay till that time. It is a great matter to have horses in order at this season of the year; as, if they get out of condition at the begining of winter, it is hardly practicable to make them up for many months, with every indulgence. I mean, therefore to be particularly attentive to their keep at this time, and next week to give up two journeys *per* day. As field labor is in an advanced state, one journey of five hours will, in my opinion, answer quite well till the spring quarter arrives.

November 25.—As the land intended for beans and peas has now got the first furrow, part in length, and the remainder across, we have now begun with what is meant for summer-fallow. I have ordered that a deep ploughing shall be given to these fallow fields, knowing, unless it is completely ripped up, that no after exertion can compensate any defect in the first instance. I have taken particular care, that the head-lands and *gaw*-furrows of every field ploughed, shall be sufficiently digged and cleaned out, so as a drop of water may not stand upon them during the winter months. This was an advice which you constantly inculcated; and, if I recollect right you often said, that, at one glance, you could determine whether the general management exercised upon a clay land farm was good or bad, merely by looking at the head-land furrows.

My predecessor is busy thrashing out his crop, and rather proceeding faster than is desirable. It is foreign to my inclination to have any dispute with him, either on that or any other matter; therefore, though he could be compelled to thrash in a regular manner, I am stacking the straw in the yard, which will, at least, serve for littering in summer. It is built with care, and the stack being carried up in leets, may be expected to stand the weather without sustaining much injury.

The invitation given in your last, to spend a few days at Barnhill, is highly acceptable. I trust to be accompanied by my father to your hospitable mansion—a mansion where business is never neglected, nor the slightest departure ever made from good order and regularity. There I spent twelve months with great satisfaction; and thence I expect to derive happiness for many years. You have been always good to me; and I can only show the gratitude implanted in my mind, by desiring most sincerely to receive a greater favor than any hitherto conferred upon me.

Class IV.

December 15.—I have the satisfaction of acquainting you, that I got safe home from Barnhill and that all things had gone on well during my eight days' absence. Indeed, my foreman appeared to have been particularly attentive to the instructions given him at my departure; though, as the weather remained steadily dry, they were easily followed out. It is under different circumstances that absent masters suffer most. They go from home, leaving directions—probably very proper ones at the time they delivered, though quite irrelevant when a change of weather occurs. If such directions, therefore, are literally obeyed, much loss necessarily ensues. Hence the utility of a head-servant, of good capacity and sufficient experience; one who can form a new plan of action upon the spur of the moment, and with precision apply it to the different people over whom

he possesses a temporary government. Though the abilities of my servant were not completely tried during my short absence, still I am inclined to think them above an average. He is sober and steady—qualities of great importance; and, having got rather a better education than common, is free of prejudice, and eager to introduce every new improvement which has the appearance of being useful.

If any thing could lessen the pleasure of the visit to your house, it was the absence of my father, who, you know, was unluckily confined to his room at that time by indisposition. I am happy, however, to acquaint you, that he is now restored to health, as you will observe from the enclosed extracts of the letter sent me yesterday. It was out of my power to see him on my return from your house; but, knowing his anxiety about the business which carried me there, I wrote him immediately. Very likely, a copy of my letter may afford some satisfaction to you and your worthy family.

"Dear Father,—I felt great concern at your being unable to meet me at Barnhill; especially as the business in view was of such a nature as materially to influence my future welfare and happiness. Upon my arrival at Barnhill, Mr. Jamieson showed me your letter, the contents of which damped my spirits, and certainly served to lessen the pleasure which otherwise would have been enjoyed at his hospitable mansion. Trusting you are now in a convalescent state, I proceed to detail the leading particulars of my visit, firmly convinced that you and my mother must be highly gratified at my meeting with such a favorable reception.

"I found your old friend in good health, and as active and attentive to business as when I was in his service. The first and second days were spent in examining the farm, and inspecting the live-stock; but of these things we will talk afterwards. With regard to the chief object of my visit, suffice it to say, that after several conversations with Miss Jamieson, I ventured to disclose my sentiments to her father, who received them in the most favorable manner. 'George,' says he, 'I have no objection against receiving you as a son-in-law, having formed a good opinion of your principles; but you will attend, that, in a matter of such moment to my daughter's happiness, I will not presume to dictate to her in the slightest way. If you can gain her consent, neither mine nor that of Mrs. Jamieson will be wanting. Indeed, neither of us were so short-sighted as to be ignorant of your intentions long before they were formally announced. One thing, however, I must tell you, which is, that my daughter will not have a large fortune; therefore, if you are guided by expectations of that nature, you will be completely disappointed.' I quickly replied, 'My dear sir! it is not money, but a good wife, that I am in quest of. From my knowledge of your daughter's disposition, I entertain not the slightest doubt of her making an excellent wife: therefore, money-matters shall be left entirely to yourself.' The ice being thus broke, I applied to Miss Jamieson, who, in the most agreeable manner, referred me to her parents; and I have the inexpressible pleasure of acquainting you, that every thing was soon arranged. Mrs. Jamieson, however, insists, that the connexion shall be delayed for a few months, so as she may have time to prepare her daughter's *providing*—a phrase well known in your neighborhood, though likely unknown amongst our southern neighbors. To this delay I was obliged to yield a reluctant consent, being of opinion that, after parties understand one another, no time ought to be lost in bringing such a business to a conclusion.

"Be so kind as let me know, per return of post, concerning your health. And with love to my mother, and other relatives, I am your," &c.

My father's answer to the above was highly gratifying. After mentioning that his health was completely restored, he adds,—"I feel the most heartfelt satisfaction at the prospect of your connexion with such a truly respectable family—a circumstance of more importance to a young man than generally imagined. Mr. Jamieson has been my intimate and steady friend for thirty years. Often have I received benefit from his advice; and, though both about the same age, I have somehow or other greater respect for his sentiments than for those of any other cotemporary. He is not only a prudent, but a good man; therefore, I must regard your connexion with his family as the most fortunate circumstance which could befal you." So speaks my worthy father; and, by doing so, increases the obligations which, from first to last, I have been under, to his parental goodness. After these egotisms, you will likely wish to know what is doing upon the farm. At this time, the detail shall be given in a few words.

The fields intended for summer-fallow next year are nearly ploughed; and, when that work is finished, it is proposed to break up some of the old grass land. I formerly mentioned that fifty acres were in grass, of different ages, last season, all of which is meant to be ploughed for oats, except a ten acre field that is reserved for the ewes. Upon this field they are to receive turnips, either during a storm of frost and snow, or when the spring season arrives, as it will not be prudent to give them any of the young grasses till they have dropped lamb. As yet, I have only lost two ewes, which I presume, out of six score, does not exceed an average loss. The remainder are in excellent condition; and, having been tupped about the end of October, may be expected to drop lamb in the end of March, or thereby. The cattle wintering in the yard are thriving well. Hitherto, they have got only one double cart-load of turnips per day, which, amongst thirty beasts, can only be considered as a tasting. Abundance of good straw being furnished, they have been kept in good order by that quantity of turnips; but, in a few weeks, I mean to increase it to two loads.

I have *spoken* to my servants, as it is called here; in other words, have *engaged* them for another year, upon the same terms as formerly. Upon the whole, each of them has behaved well; therefore, no advantage could arise from making a change. I have not taken them bound to provide *workers*, as many people do; considering such a practice to be arbitrary and oppressive. If a servant has children capable of working, it is fully more for his interest that they should earn wages, than it is for that of the master who employs them: therefore, as voluntary work is to be preferred to that which has the appearance of being compulsory, I thought it better to make no agreement on this point, further than that those who were capable of working are to serve me in pre-

ference to any other person; it being always understood, that, for their labor, payment is to be made according to the rates given in the neighborhood. This regulation is so fair and reasonable, that no servant can object to it.

January 10.—A heavy snow storm came on a few days ago, and occasioned the ewes to be put upon turnips without delay. As the storm was preceded by a week of frosty weather, due warning was thereby given to draw a quantity of turnips, sufficient for a month's consumption, and to drive them to the gate of the park where the ewes were depastured. From the *depôt* thus provided, my herd drives three cart-loads of turnips every day, which I find, from trial, to be nearly the quantity the ewes can consume. The cattle now get two cart-loads per day, from a similar *depôt* in the stack-yard: and, as such storms rarely last longer than a month, I hope the quantity stored will answer till a change of weather ensues. I have provided two pairs of broad cylindrical wheels for driving turnips from the field afterwards, as the ground must be in a wet condition when the storm goes away.

To give employment to the horses, I am preparing to empty the straw-yards, when the whole materials therein accumulated will be regularly mixed and prepared as dung for next year's turnip crop. I do not mean to pile up those materials in the way recommended by some people; but to drive carts upon the site of the middenstead, taking care to spread the whole in the most minute manner. Had the materials been rotted, or even imperfectly rotted, a different course would be the preferable one; but most of them are nothing but straw, hardly in a wet states therefore could not be manufactured into dung in the fashionable way. The small quantity of dung gathered from the stables and byres shall, however, be carefully interspersed with the layers of straw, so as fermentation may follow. To hasten the process, it is proposed to cover every layer from the courtine one foot thick with snow which is understood to be an excellent expedient.

Most of my neighbors are complaining grievously of the state of corn-markets. They allege, and probably with some justice, that, while farmers have heavy war-taxes to pay, which of course cannot be done unless increased prices are received for their produce, importation of grain from every quarter of the world, even from those nations with whom we are at deadly variance, is countenanced and encouraged by the government of the country. Being at this time little interested in such discussions, I cannot say my mind has been turned to them; but I shall communicate the substance of what a friend of mine urged upon the subject the other day in a public company. His antagonist, a gentleman who seemed to favor the manufacturing interest, contended, that farmers could not be justified in complaining against the importations from foreign countries, or of the encouragement given by government to such importations, so long as importation rates were below the average of our corn-markets; because it was to be presumed every farmer held these rates in view when agreeing for his farm, and framed his offer accordingly. In opposition to this doctrine, my friend maintained, that the importation-rates were framed for peaceable, not for warlike times; and that, if the farmer was to be subjected to war-taxes, he undoubtedly was entitled to partake of one advantage hitherto enjoyed by the growers of home grain during war, namely, a more limited importation from foreign countries; whereas, under the new-fangled and modern system of granting licenses for importing grain from our inveterate foes, the home market was inundated with foreign grain much more than in former times, when Britain was at peace with all the world. He likewise maintained, that the distresses of the farmer were much increased by the particular specialities of the season. The calamities of a bad harvest must be submitted to. This he cheerfully allowed; but, though submission is due to the dispensation of an allwise and overruling Providence, he contended, that it was neither wise nor just in the government of the country to adopt measures calculated to increase the calamities which had befallen the agricultural interest in consequence of the adversities of the season. He admitted, that it was prudent to import foreign grain to a certain extent, so as the deficiencies of the home crop might be supplied; but decidedly contended, that, to encourage foreign importation to such an unprecedented extent, was a measure, under the circumstances of the case, calculated to beggar the majority of British farmers;—depriving them, in numberless instances, of a market, and causing their grain to remain either as a dead stock in hand, or to meet with a sale upon the most disadvantageous terms. The truth of these observations shall be left for your determination.

February 8.—The storm of frost and snow ceased last week; and is succeeded by fine genial weather. This favorable change allows the clover leas to be ploughed; and we are busy with them; though, till the end of the month, I do not mean to go more than one journey per day. I intend, as soon as possible, to ridge up the turnip land that is cleared, and have it seeded with wheat. Since the storm went away, two cart-loads of turnips have only been given to the ewes per day; which seems to be sufficient, there being a considerable quantity of old fog still upon the pasture-field. The cattle receive the same number of loads; and are evidently on the improving hand. The straw-yards were completely emptied of their contents during the storm; and two large middens were made, both of which seem to be in a forward state, throwing out a great smoke every morning, and compressing in a gradual manner. A large quantity of snow was mixed with the materials, which, I have not the least doubt, will produce an important benefit.

The prohibition against the use of corn in the distilleries, has occasioned, of late, several meetings of this county; and I have paid some attention to the arguments used for withdrawing the prohibition. It is right to state, that the adversaries of the prohibition admit, in the fullest manner, the propriety of prohibiting distillation from corn, when there is a scarcity of that article in the country. They contend, however, in the first place, that barley and oats, the articles used in distilleries instead of being scarce, have been fully as plentiful in Britain, during the two last years, as at any former period; therefore, that the prohibition was not only an unnecessary, but a dangerous measure, if it was solely meant to prevent an evil, of which there was no reason to entertain any apprehension. In the second place, these gentle-

men contend, that to relieve the West India planter, at the expense of the British farmer, was the real cause of the prohibition, though such a cause could not be prudently assigned by those who promote that measure. To me there appears no doubt about the matter. In fact, the government of Britain, for more than a century, has rather inconsistently shown a greater desire to promote the prosperity of the colonies, than to advance the internal improvement of the parent country. I shall not trouble you by investigating the policy or impolicy of such a system, though to that source may be traced the law which prohibited the use of corn in the distilleries of Great Britain; a law, which shuts up one of the best markets farmers had for the disposal of their produce; —a law, which obliges the British people either to consume spirits of an abominable and destructive quality, or to refrain from the use of them altogether; the high duties upon wholesome foreign spirits serving as effectually to prevent three-fourths of the nation from using such spirits, as if their consumption was expressly prohibited by an ordinance of King, Lords, and Commons, in Parliament assembled.

March 10.—Having ridged up the land cleared of turnips, it was sown yesterday with wheat of the autumn kind; having resolved, as formerly intimated, to have nothing to do with the varieties of spring or summer wheat, so anxiously patronized and recommended by the Board of Agriculture. The wheat was accompanied with grass-seeds, though some of my neighbors think, if they vegetate soon, damage may be sustained from the April frosts. Of this I entertain no apprehension; remembering, when in your service, of the like practice being extensively followed without any disadvantage. No more than five acres of the turnips are yet removed; so, about seven acres of them and ruta baga remain for spring consumption; which, supposing the ewes to get the supply hitherto given, will fully carry on the cattle till the season of grass arrives. All the grass land is now ploughed, and to-morrow I mean to prepare the bean land for drilling. On these accounts, we are now going two journeys per day, though it is difficult to make out nine hours work in the field. The day, however, is gradually lengthening, and next week there will be no difficulty in making out the full time. The weather being dry, I propose to cross-plough, in the first place, the land that was ridged up last winter. This being done, we shall harrow it; then drill it up; and, after the seed is deposited, reverse the drills, so as the seed may be covered. The success of these complicated processes depends entirely upon the weather; therefore, no time shall be lost in carrying them into execution. The other fields intended for beans, shall only get one ploughing, after being completely harrowed. They were cross-ploughed in November, and it is proposed to run the drill-barrow after the third plough. This comparative trial will serve to ascertain which of the methods is best, though, *prima facie*, it appears, the more work that can be given to land in the spring months, so much cleaner must it be for the succeeding crop of wheat, providing it is in proper condition when the work is performed.

Whenever the bean land is seeded, it is proposed to sow the oats, though, probably, part of that work may be undertaken, should the weather be such as to interrupt the processes of preparing and sowing the bean land. Some of the land ploughed from grass will require a good deal of harrowing, especially what is of clay soil, and was ploughed after the storms of frost and snow. The horses, however, being fresh, and all in good condition, I have not the slightest doubt of getting on full as fast as any of my neighbors. Indeed, if I do not get faster on this season than other people, it would be impracticable to execute the work of the farm afterwards, without the aid of another pair of horses. I have no corn to thrash, and, of course, none to drive to market,—operations which would require one day in the week to execute; therefore, I must be either overstocked this year, or understocked the next one, if the same strength is kept in both seasons.

When mentioning the horses, I may inform you, that one of them was lately attacked with a violent inflammatory cholic, the cause of which I cannot assign, as, to my knowledge, he had got nothing but his usual food, and had performed no more than his ordinary share of labor. I ordered the farrier to bleed him in the first instance, and then to administer a dose of laudanum. As the complaints were not thereby abated, I directed injections to be given, (which were absolutely necessary, as he could not get any passage backward), and then to bathe him completely with blankets soaked amongst warm water. I sat by him the whole of the first night; and, with the aid of a servant, endeavored to prevent the injury often sustained from tumbling and rolling under the pain of such an agonizing trouble. Next morning the horse was not much better; and, as he steadily refused all sustenance, either of meat or drink, unless administered by the horn, the farrier gave him up. It is an old saying, that so long as there is life there is hope; so I determined every thing should be done for the relief of the horse which could be thought of. The farrier was therefore directed to back-rake him repeatedly, and to administer fresh injections. Two servants were appointed to attend constantly in the stable, and to rub him heartily about the belly whenever he stood upright. A small quantity of boiled barley was also given every hour by the horn; and some meal and warm water, in which a little nitre was mixed, were given in the like manner. Notwithstanding of the farrier's predictions, our patient showed signs of convalescence on the fourth day; and by a continuance of care, appeared quite well in the week afterwards. I used him gently for some time, and now he is as stout and healthy as any horse in the stable.

March 30.—I have now finished the sowing of oats and beans, and am quite satisfied with the appearance of the fields after being harrowed. I had, however, to roll part of the bean land, in order to make it decent to the eye in the mean time, and fit for the horse-hoe afterwards, though I am not sure whether the crop may be benefited by such a process. I have likewise sown three acres of tares, to be cut as green food betwixt the two crops of clover, and mean to sow other two acres in a fortnight, under an impression, that when the second crop of clover fails (and it does fail in particular seasons, upon the very best land), it is almost impracticable to carry on the work of a farm without such a succedaneum. The oat fields, upon the whole, took on a good skin, though some

of them required five double times of the harrow before they were sufficiently pulverized. They are all neatly water-furrowed, and the cross furrows are digged out with the spade. I was careful to select oats for seed which were pure and unadulterated. Those purchased were chiefly of the potato variety, which, in my humble opinion, is far superior to any other, when sown upon fresh and rich soils. Ten acres of the thin clay soil are, however, sown with what is called Angus oats, thinking that field not in condition to carry a full crop of the other sort.

A few of the ewes have dropped lamb; and it being absolutely necessary that they should now be regularly attended, I have ordered the shepherd to remain the whole day, and as much of the night as possible, with them in the field. I propose next week to remove all that are lambed from the old pasture field, and to put them upon the young grasses; thinking this the best way of giving a full supply of milk to the lambs. A cart-load of ruta baga shall, however, be given each night, so long as needed; though I apprehend, if the weather continues favorable, that auxiliary article may soon be withdrawn, the appearance of the young grass being very promising. I mean to allot forty acres of grass, in the first instance, for the ewes; which is one acre of grass for three ewes. As the lambs are taken away, this quantity shall be lessened according to the season; but, at all events, I hope it will be in my power to save ten acres for soiling in the end of July, having found last year the inconvenience of wanting green grass at that period. If I do not need it for soiling, the alternative of making it into hay remains; and in one or other of these ways, the grass can be used with advantage.

The land intended for potatoes, ruta baga and turnips, this year, is now getting a cross furrow, and stands much in need of a ripping up, being in many parts very full of quickens. Perhaps the fields intended for these roots may contain 35 acres, or thereby; though, as there is much foul land in the farm, nearly the like quantity will remain to be summer-fallowed. I hope this arrangement will meet with your approbation, though contrary to the one originally chalked out; which, in fact, could not be executed in the first instance. You will be so good as attend, that the whole 35 acres that are meant for turnips, &c. are of soil admirably calculated for these crops; hence, you will recognise the propriety of extending their culture as far as possible. By doing so, the farm will be enabled to keep a large stock of cattle and sheep next season; a circumstance of the first importance in every situation, because in no other way can a farm be so speedily and substantially enriched. Be assured, however, if the ground cannot be prepared in a husbandmanlike manner, that such a quantity of turnips shall not be cultivated. It is my wish to do every thing well, and never to attempt pushing any plans further than warranted by existing circumstances. The extent of ground proposed to be turnipped and summer-fallowed, viz. 70 acres, certainly exceeds the work usually performed by five ploughs; but, as I will get early at the ploughing, and am not to drive any lime this season, I do not despair of accomplishing the undertaking. At all events, I will purchase or hire additional strength, rather than suffer the radical work of cleaning the ground to be imperfectly executed. It is a material object with every incoming tenant, to put his land in order as fast as possible; and, under the influence of this impression, I am led to make an exertion this year, which afterwards, I trust, will be altogether unnecessary. To dung the whole land proposed to be turnipped and fallowed, will be impracticable; but as grass-seeds are to be sown with the corn crop which follows, the want of manure may in some respects be compensated by additional pasturage.

April 18.—The ewes are all lambed, and for several days have been fed entirely upon the young grasses. From 116 ewes, the number that remains, (four having died in winter and spring,) I have 153 lambs; most of whom are healthy and thriving. The grass fields, indeed, are good, yielding a full bite; and, should the weather continue temperate and dry, there is every prospect of bringing the young stock to market in a month, or thereby. We had one bad night at the throngest of the lambing-time, which caused three new dropped lambs to perish; but, if the like occurs again, I am resolved to bring the whole home to the stack-yard, where they will be completely sheltered.

At this advanced period of the season, I thought it prudent to take up the ruta baga, and get the ground thereby prepared for barley. After cutting off the tops in the field, which were given to the cattle as fast as they could use them, the roots were driven home, and piled in the stack-yard. The quantity that remained loaded 105 carts; so I will be in no want of green food for the cattle till the season of cutting grass arrives; which, according to present appearances, will be about the last week of May. The cattle are in a thriving state; and after a month's soiling, may be expected to be in condition for the butcher.

The field which carried ruta baga, was prepared for barley immediately after the roots were removed. It was cross-ploughed first, then harrowed and rolled, and afterwards ridged up, and sown with barley and grass-seeds. It looks tolerably well to the eye; though, unless moisture is soon received, the seed must vegetate imperfectly. This is a defect which accompanies the system of feeding in April and May, not to be removed unless early storing is resorted to. I have sown the fallow wheat-fields with grass-seeds, and given them a substantial harrowing. Part of the land, where the wheat plants appeared loose at the root, were also rolled; though I know you are not an advocate for rolling land that has lain through winter under the harrow process. The seeds were sown in the same proportion as last year. Indeed, a thick seeding seems at all times advisable.

Having now finished seed-work, I shall detail the extent of land under the several crops, &c.; which at one glance will show you the system adopted for this season. The farm is not yet in shape; therefore, the mode of cropping suggested in a former letter, could not at this time be precisely followed.

Wheat—after summer fallow - -	38 acres.	
after beans - - -	30	
after turnips - - -	5	
		73
Barley—after turnips and ruta baga -		7
Carry over - -		80

Brought over - -			80
Oats—after grass - - - - -			40
Beans—after lea oats - - - -			40
Tares—after ditto - - - - -			5
Potatoes, ruta baga and turnips—intended to be taken after wheat and lea oats -			35
Summer fallow—after wheat - - -			35
Old pasture - - - - - -			10
Clover and rye-grass—sown last with fallow wheat - - - - - -			40
Ditto - - - ditto with barley			10
			50
Fractions of the several fields -			5
Acres -			300

It was once my intention of giving a particular account of the expense required to stock and cultivate the farm to this date. But observing that this letter has already run to a great length, I must confine myself to an abstract detail of that expense, without going into the *minutiæ* thereof.

Ploughing, harrowing, rolling and hand-gathering turnip and fallow land last year, before the term of entry - - - - -	L. 50	10	0
Grass-seeds for 50 acres - -	50	0	0
10 plough horses, at 55 guineas each	577	10	0
1 old horse, as a supernumerary -	20	0	0
1 saddle horse - - - - -	60	0	0
3 milch cows - - - - -	48	0	0
Ploughs, harrows, carts, rollers and other implements - - -	165	0	0
Saddler's account for harness, &c.	52	10	0
Sacks, ropes, &c. - - - - -	14	5	0
Balance of arbitration with outgoing tenant, and expense thereof -	23	12	0
Cleaning turnips, filling dung, spreading lime, and other incidental expenses, last summer - - -	35	0	0
Allowance to 7 servants for harvest maintenance last year, 3 firlots of meal each—*Inde*, 5¼ bolls, at 24*s*.	6	6	0
Expense of altering and improving the dwelling house - - -	52	10	0
Furniture purchased, independent of linens, &c. from my mother -	300	0	0
Horse-corn last summer - -	64	16	0
Ditto from September last to this date, 120 bolls, at 24*s*. - -	144	0	0
Corn for 7 servants, one year, at 17 bolls each—*Inde*, 119 bolls, at 28*s*.	166	12	0
Smith, wright and saddler for one year - - - - - -	45	0	0
Lime purchased last summer - -	70	0	0
Seed-corn, viz. 64 bolls wheat, at 45*s*. L. 144 0 0			
6 bolls barley, at 32*s*. 9 12 0			
38 do. oats, at 28*s*. - 53 4 0			
50 do. beans, at 30*s*. 75 0 0			
5 do. tares, at 50*s*. - 12 10 0			
	294	6	0
Grass-seeds, this year, for 50 acres	50	0	0
Window tax, horse tax, &c. - -	25	0	0
Incidental expenses, last winter, to this date - - - - -	10	0	0
6 score of ewes, at 33*l*. - - -	198	0	0
30 stots for wintering, at 15*l*. - -	450	0	0
Household expenses since Whitsunday, as per book - - -	120	0	0
Carry over L.	3092	17	0

Brought over L.	3092	17	0
To which may be added,			
Expense of thrashing-machine, fanners, firlots, and other barn implements not yet valued - - - L.	120	0	0
Horse corn till harvest, 70 bolls, at 25*s*. -	87	10	0
Household expenses till ditto - - -	50	0	0
Incidental expenses in summer - - -	30	0	0
Harvest expenses -	100	0	0
	387	10	0
L.	3480	7	0

From the above, it appears, that a farm, such as mine, cannot be stocked, in a substantial manner, at a less sum than 11*l*. 12*s*. per Scotch acre, or 9*l*. 5*s*. 6*d*. sterling per English acre. Indeed, the tenant of such a farm ought to possess an additional sum at the outset, otherwise he stands a chance of being short of money before his first year's rent is paid, few farms being capable of paying full rent in the first instance.

It may probably be alleged, that the profits on cattle kept during the first summer, and those that may be gained from the live stock this year, ought to be deducted from the above sum of capital stock, as these profits will be in hand before the period arrive when the account is finished. Though this is true, still, it will not warrant such a deduction from the amount of stock; because these profits must be appropriated to the fund out of which the first year's rent is to be defrayed—a fund almost, in every case, a short one; therefore, standing more in need of aid, than capable of giving any assistance to supply a deficiency of original stock.

Next week, it is my intention of being at Barnhill, when we will talk over these matters. Nay, more, if the *providing* is all ready, or nearly all ready, I trust, that a business upon which the happiness of my life in a great measure depends, will be concluded to the satisfaction of all parties, and of none more than

Your friend and servant.

ON BREEDING AND REARING HORSES FOR AGRICULTURAL PURPOSES.

From the Franklin Farmer.

The No. for June 1st offers premiums for the 1st and 2d best essays "on the subject of breeding and rearing horses for agricultural purposes." The writers are laid under no restrictions as to the mode of discussion, or the breeds they may choose to advocate. An agricultural paper could not be expected to have been more liberal. A dissertation on the blood and proportions, the breeding, rearing and training the turf race-horse, or the stouter built, but not much less blood-like roadster, hunter, or war-horse, which the advance of modern times has introduced, might not have suited the taste of a majority of your readers. You are aware however, that by placing an interdict on the turf, the camp, the field and the road, you damp the ardor of your writers, and strip the horse of his glory.

The plough and cart horse is a mere utilitarian, and ploughing and carting, however the poets may have embellished them in song, are known by the *Workies* to be plain fact matters, and effectually achieved by the due and continued application of bone and sinew. There evidently is no fancy in the affair to the man who holds the handles and guides the team. There is however, ample room for the exercise of much practical good sense in pointing out the best method of breeding, raising, breaking, and working farming horses to the best advantage. The profits of agricultural operations generally are moderate, and managed as they are in many instances, loss is incurred. Most breeders of animals, it is apprehended, receive but a very inadequate compensation for their time and attention and money expended. It ought not to be, and that it is, does not result necessarily, but from the want of proper care and judgment in breeding and raising. They follow what has been not inaptly called the hap-hazard mode, by putting any sort of a female to any sort of a male, without regard to qualities, and in raising they are so stinted and starved, as to warp and destroy whatever little of good form and constitution they may have accidently brought into the world with them. These seem to act without object, except, that they know a horse is a horse, and a steer a steer, and that if the colt was got for a barrel of corn, and the calf gratis, that they have saved their money.

The business of breeding animals, in modern times, is said to be science. It has not been however, and probably never will be reduced to exactness. "Dame Nature" in her operations delights to display endless varieties. But certain rules have been laid down, by the observance of which we may reasonably expect to approximate certainty. "Like begets like" is the leading rule. It not only has its exceptions, but it must be understood with limitation. Select a horse and a mare, such as you want, or as near as you can find, the produce of their conjunction may resemble the sire, or the dam, or neither; but it may have an intermediate form, or may take after some remote ancestor; and if the remote ancestors were indifferent, or positively bad, the chances will be against the rule, in proportion to the number of worthy progenitors. It should be enjoined on beginners, therefore, 1st, to select good animals to start upon, where no better evidence can be had; 2ndly, but where it can, to select them from good families. In England, where more attention has been paid to the breeding and rearing the blood horse, than in other countries, they have arrived at extraordinary size, and power and endurance; and it has been done by combining the Arab, Barb and Turk, and developing the bone and muscle of the new race by generous feed and judicious exercise. There no one thinks of breeding a racer from a mare who has not at least five pure crosses. And many of their most distinguished mares can number double the amount, landing on a royal, or other Arabian or Barb mare. There is something in the blood, that gives family distinction, though the blood may not tell in particular individuals, either from mismanagement or accident, or from some defect in constitution or form. A third rule requires that they be crossed; in other words, that we avoid the coupling together near relatives. The more remote the families, probably the better; but after prohibiting the intercourse of sire and daughter, brother and sister, beyond these we may probably be permitted to use our judgment in selecting the requisite forms. Some of the double Januses were very well proportioned, but they were very small. The double Archys evidently show a falling off. But Wagner by Sir Charles out of a Marion is thought to be among the good ones. And we need not look for a better than Highflyer, his dam by Blank, got by Regulus, both sons of the Godolphin Arabian.

There are some subordinate rules, that in the thorough-bred studs, should be well considered. 1. Certain families cross better than others, all being good. 2d. Certain individuals cross better than other individuals. 3rd. And certain individuals breed better than other individuals. Herod and Eclipse were extraordinary racers and stallions, and were of good families, and they crossed well upon other good families. But the union of their bloods was rather transcending, and were we to select from the best of Eclipse's sons, we should take these—Benningbrough, Waxy and Gohanna, all out of Herod mares and Hamiltonion, out of Highflyer, a son of Herod. Sir Archy and Eclipse of Long Island are both good stallions, and their blood is thought to cross well; but the blood of Eclipse and Rattler, son of the Sir Archy, "nicks." These last rules are to be learned by practice only. Who can assign the reason why Rattler's immediate descendants have not shown his worth? In them it is measurably dormant, but it is shining with resplendant lustre in Mingo and Job, of the second generation. And of Job it was hardly to have been expected, as he combines an unusual proportion of Diomed and Sir Archy blood, being bred very much "in and in."

The thorough-bred horse, standing evidently and acknowledgedly in the first rank, the rule for breeding and raising him being "considered and freely understood," a variety suited to a particular purpose is to be produced by considering the properties wanted, and the families and individuals from which such properties are most likely to be inherited. Were the thorough breeds equally numerous, and bred and raised at the same or nearly the same cost, I would say without hesitation, and so would every one who understands his interest, put the thorough breds to work. Eclipse, or Rattler, or Tranby, or Mingo, or Job, if put to it in their prime, would have done more work than any inferior bred horses of their size. In June or July, blood will tell as promptly in the corn field as on the race course. My best breeds always then take lead. But the above, and such as the above, are not accessible to farmers generally. The price forbids. What then is to be done? In this glorious land of liberty, every one, who has the means, does as he pleases, and I only wish, I can scarcely hope, that some individuals or companies or agricultural societies would import a bay Turk, a bay Barb and a Cleveland bay, and bay draw or draught horse. The Cleveland bays are said to be almost uniformly of bay color and universally gentle in harness. I have seen a few matches from the north, apparently half breeds, excellent in harness, of the desired size and shape.

Draught horses, perhaps equal to any, might be had in Virginia or Pennsylvania. The stock should all be selected by a competent judge of horse flesh, and the two coarser kinds should be chosen not only with a view to their own stoutness

but family stoutness and gentleness at work, and with a scrutinizing eye to their hoofs and pasterns. Brittle horn, gummy ankles, or tendency to grease in the heels should be an insurmountable objection to a horse, however perfect in other respects. We would of course have to choose the temper of the Barbs and Turks, though a man thoroughly conversant with horses can from certain indications form a tolerably correct estimate of their tempers. A person but moderately acquainted would be able to know that Belshazzar was quiet, and that St. Giles was "queer." The mares to be selected, should be well bred, of bay or brown color and a few grays. They should have long heads, wide between the eyes, and jaws well displayed, with clear placed eyes, and open foreheads, with pointed, well set ears, and fine muzzles and nostrils; necks of moderate length and muscular, with large detached windpipes; having quarters before and behind with plenty of muscle; large bodies with large ribs, and the short ribs close to the hips; standing even and rather wide on legs abounding in bone and sinew, and terminated by tough black hoofs. A white pastern and hoof is about as liable to disease as those of black or dark chesnut color. The stallions should be of similar shape, but more coarseness is tolerable in them, particularly about the neck. The mares above described of 15 1-2 hands high or upwards should be put to the Barb and Turk; those under, to the Cleaveland bay. Those three crosses in the general would produce stock of sufficient size. The best of the colts should be kept for stallions. When a filly was deficient in size she should be put to the dray horse. The crossing and the result of each cross should be regularly recorded. If of very defective form she should not be permitted to breed, or be put to a jack. If the mule inherited the defect, it would not be perpetuated. And all the blind fillies, and those having defective eyes, should be put to a jack, for a blind mule would be a curiosity. A colt thus bred might be kept as a coverer at about $10 the price of the season of one mare. And where the blood had been diluted by the blood of the dray, at $7 50 or perhaps $5, which should be the minimum price. Am I asked why the expense of importing a Barb and Turk should be incurred? It is answered, the Byerley Turk and the Curwen Bay Barb got a colt and filly, the sire and dam of Partner, one of the best horses ever bred. He got Tartar, a capital one. He got Herod, the lasting properties of whose stock have probably never been equalled. He got Highflyer, who had no parallel in his day. He got Sir Peter, a good racer, and, as a stallion, without a parallel in his day. He transmitted his excellence to Haphazard; and he to Philho-du-puta; and he got Birmingham, who, but for the inroads made on his constitution by bad management, might have perpetuated the family stoutness. Perhaps it may be done by Philip, who came of Treasurer, a daughter of Camillus, "whose stock were particularly neat and of great strength for their size."

Having chosen the right sort to cross, and thereby bring on a new variety, the mode of raising them may be described in a short compass. The mares and horses should be in good health and condition, when put together. During the period of gestation the work to be done by the female should be moderate, and as she approaches the time of delivery, the work should be suspended and her condition a little improved. The male should not probably be worked, but plenty of exercise should be given him regularly, and his powers should never be overtaxed. The foals, for the best, should be dropped when the grasses are plenty to increase the flow of milk, or, if the mares are to be worked after foaling, generous food should be given them in sufficient quantities. The young will learn to eat at three or four months old, and may be weaned at five or six. They should be sheltered from the inclemencies of winter, and fed to keep them straight and growing, without being forced to precocious maturity, as is done in England, in the racing studs. The object of the forcing system is to attain size and strength to enable them to contend in "their 3 year old form" for the high prizes. The Derby, the Oaks and St. Leger stakes have attractions for breeders and sportsmen; and are annually won, not always by the best colts and fillies, but are annually the means of destroying, or greatly impairing the value of many good ones. Nature would indicate that a horse should have attained full age before he is put to his utmost exertions. Foals should be gentled immediately after their birth, and they rarely, perhaps never forget it. Yearlings also should be kept growing uniformly in winter as in summer, and at 2 years old should be halter broke, and used moderately at three, increased in work at 4; and a filly at 5, will do full work, but a gelding not before six, perhaps 7. Very often, however, they are broke down before they are aged by improper management, and thereby several of the most valuable years of their lives are lost or rendered nearly useless.

A few objections may be answered to enable us to come to a close. It is said that the skins of the well breds are fine, and liable to chafe and gall. The gear should be made to fi , be of good quality, and kept soft and pliant. It is objected against the breds, that they are bad tempered, and restive, and unmanageable. The objection applies not generally but to a part, and a small part only. The finest, and the best tempered, and altogether the best carriage horse I ever saw, was a Pacolet out of a Spread Eagle. And as to the restive, begin with them young and learn them obedience by times, and keep them obedient. If they are suffered to run wild till four or five years old, you should expect trouble, unless you employ a "whisperer." I had a filly whose sire had a decidedly bad temper, and her dam's sire was equally vicious. She was worked tolerably well at three years old, but was injured so much by another team that she was turned out for the season, and the next year refused. She bred me a filly, sold for the saddle, and a colt, that works kindly, before I sold her, and a better roadster than her is rarely to be seen. I had two fillies full bred. The one was put to work at three years old and worked kindly. The other was a splendid creature, that I used under the saddle; but on one occasion and without requiring her work, but rather to see whether she would work, I put her to the plough. As she did not like it, and fearing she might be injured, I ordered her to be stopped. I have latterly worked a full bred of the same family; and another thorough-bred in the wagon, merely to see that they would work, and they are now both valuable brood mares, the thorough-bred a splendid mare, and has a splendid filly.

WM. WILLIAMS.

AGRICULTURAL AND RURAL ECONOMY OF FRANCE.

Extracts from Birkbeck's Tour.

"In every part of France women employ themselves in offices which are deemed with us unsuitable to the sex. Here there is no sexual distinction of employment: the women undertake any task they are able to perform, without much notion of fitness or unfitness. This applies to all classes. The lady of one of the principal clothiers at Louviers, conducted us over the works; gave us patterns of the best cloths; ordered the machinery to be set in motion for our gratification, and was evidently in the habit of attending to the whole detail of the business. Just so, near Rouen, the wife of the largest farmer in that quarter, conducted me to the barns and stables; showed me the various implements, and explained their use; took me into the fields, and described the mode of husbandry, which she perfectly understood; expatiated on the excellence of their fallows; pointed out the best sheep in the flock, and gave me a detail of their management in buying their wether lambs and fattening their wethers. This was on a farm of about 400 acres. In every shop and warehouse you see similar activity in the females. At the royal porcelain manufactory at Sevres, a woman was called to receive payment for the articles we purchased. In the Halle de Bled, at Paris, women, in their little counting houses, are performing the office of factors, in the sale of grain and flour. In every department they occupy an important station, from one extremity of the country to the other.

"In many cases, where women are employed in the more laborious occupations, the real cause is directly opposite to the apparent. You see them, in the south, thrashing with the men under a burning sun; it is a family party thrashing out the crop of their own freehold. A woman is holding plough; the plough, the horses, the land is her's, or (as we have it) her husband's; who is probably sowing the wheat which she is turning in. You are shocked on seeing a fine young woman loading a dung cart; it belongs to her father, who is manuring his own field, for their common support. In these instances the toil of the woman denotes wealth rather than want; though the latter is the motive to which a superficial observer would refer it."

* * * * "From Dieppe to this place, [Montpelier,] we have seen scarcely a working animal whose condition was not excellent. Oxen, horses, and now mules and asses, fat and well looking, but not pampered. This looks like prosperity. And when I add that we have not seen, among the laboring people, one such famished, worn out, wretched object, as may be met with in every parish of England, I had almost said on every farm; this, in a country so populous, so entirely agricultural, denotes real prosperity. Again, from Dieppe to this place, I could not easily point out an acre of waste, a spot of land that is not *industriously* cultivated, though not always *well*, according to our notions. France, so peopled, so cultivated, moderately taxed, without paper money, without tithes, without poor rates, almost without poor, with excellent roads in every direction, and overflowing with corn, wine and oil, must be, and really is, a rich country. Yet there are few rich individuals.

* * * * * * *

"In the agriculture of France there is a great sameness. The arable land, which comprises almost the whole surface of the country, the vineyards, and a few tracts of mountain excepted, may be divided into five classes, according to its fertility, without regard to the nature of the soil. The first bears a crop every year, as in Auvergne, in the neighborhood of Toulouse, in some parts of Normandy, &c. This description is highly cultivated, and on a principle well adapted to soil and circumstances. The second somewhat inferior in quality, but good land, is also judiciously cultivated, with the intervention of a fallow once in six years; as about Dieppe and Rouen. The third, land of middling quality, which embraces a very large part of the kingdom, is managed on the old plan of fallow, wheat, oats. The fourth, poor land, which also covers a large space, is fallow and wheat alternately. The fifth, land still poorer, is cultivated in the round of fallow, rye, rest without grass seeds.

"The first and second classes include what there is of variety and spirit in French husbandry. In the south, Indian corn alternating with wheat exhibits management as good as the beans and wheat of the best English farmer: and the varied routine, observable in the north, affords many proofs of a spirited and judicious culture. It is the three last which betray its weakness. If they comprise half the cultivated surface, which I believe is not overrating their extent, half of that portion being fallow, it appears that one-fourth of the whole country is lying in a state entirely unproductive, a few weeds, mostly thistles, excepted. A very few half-starved sheep are kept to pick over the constantly recurring barren fallows, often accompanied by three or four long-legged hogs. On the borders and out of the way corners, you may see a cow or two with an attendant. But there appears so little for any of these animals to eat, that you wonder how even they are supported. The *prairies artificielles* (the artificial grasses as we less properly call them) of which so much is said by the amateurs, are like specks of green on a desert. Clover and lucern are cultivated with great success, on the two first classes of land; but very rarely indeed on the others. Thus there is probably as much really waste land in France as in England, and it is of an expensive kind; whereas our wastes support much more stock than theirs, without any expense whatever. It has been said that it would be vain for the French to increase their flocks, because they have already as much mutton as they consume; and there would be no market for more. This sort of argument would hold equally against every other improvement. The price of mutton is fully in proportion to that of grain. Mutton is 5d. per lib., wheat 5s. per bushel. With us, mutton is 10d. per lib., and wheat 10s. per bushel. Cheese and butter rather exceed in price this proportion; beef is about the same. Thus it appears that stock pays as well in France as in England. The French sheep are chiefly remarkable for their long legs, thin carcases and coarse wool. The same characteristics prevail from north to south, except that in the north they are larger, stouter and bear finer fleeces; in fact, they are better treated than in the

south. The best flocks we saw in the country were here and there one of the Spanish breed, which we took care to visit when we heard of them. We were anxious to obtain information respecting the Merinos of France, for which Buonaparte has done so much; as we had been taught by the *knowing* on our side of the water. The history of our proceedings in this business is just a counterpart of theirs. In 1786 Louis XVI. established a flock at Rambouillet; the produce was at first given away, or thrown away, exactly as was the case in England. Here ends the first chapter. Recourse was then had to public sale; and the higher the prices, the more eager the purchasers. This high-priced stock was well attended to, and succeeded accordingly. Fine wool was produced and offered to the manufacturers, who did not meet the wishes and expectations, probably unreasonably ones, of the growers. This is the second chapter of their history; precisely like our own, but unfortunately for the French sheepmasters, it proved of much longer duration. The revolution came on, during which manufactures suffered, and the wool still lay upon hand. At length, in an evil hour, Buonaparte (whose ambition branched out in every possible shape) resolved to cover France with fine woolled flocks, and published his famous decree of the 8th of March 1811. This gave the final blow to the Merinos. As soon as it appeared, all sales of sheep ceased; and even agreements, which had been previously made, were set aside. From that time to the present the breed has been declining in France. An effort is now making in its favor, by the law which has just passed, allowing the exportation of wool and rams."

MODE OF PREPARING LAND FOR RUTA BAGA. YIELD OF THREE ACRES.

To the Editor of the Farmers Register.

Middletown, Monmouth co., N. J.,
November 12th, 1839.

DEAR SIR—In your October No., there is an article on the culture and cost of three acres of ruta baga, copied from the Monthly Visitor, published in New Hampshire, which I read with considerable interest as I do all other communications having reference to the progress of root culture, that important auxiliary to successful farming. In fact, the writer is perfectly convinced from many years experience and observation, that no plan or system of agriculture can be complete without roots forming a very prominent part in the rotation; and the time will come, though now apparently distant, when not only Virginia, but all the eastern states will be independant of the western country for their supply of beef cattle. It is possible, however, that the American farmers, who are so sensibly alive to every principle of self-interest, may obtain a complete knowledge of the cultivation, and proper and economical use of this invaluable root, much sooner than many people expect, who have made the subject a part of their study. Independantly, however, of the farmers individually comprehending this matter, it is essential also, that the laborers should understand, and by practice, properly and directly at the first, become expert with the hoe, and in singling out the young plants without even for a moment thinking of touching them with their fingers, however close they may be in the row. In entering into a consideration of the expense stated to have been incurred (130 days at a cost of $98,) in the culture of three acres of turnips, I must confess that I never was so much at fault in my life, in being unable to comprehend how it was possible so large an outlay of labor could have been devoted to that object. It is presumed that in New Hampshire, hoes have not, as yet, found their way, but that the good farmers there proceed on the principle that "fingers were made before forks," and have used them where the hoe, plough or drill ought to have been exclusively made use of. Besides, something is said about making out the land in squares, and shaking over each intersection, seeds contained in a box, 2 or 3 in a place, transplanting where they failed to come up, &c., altogether a bundle of absurdities and perfectly contemptible, were it not that this was the first attempt on the part of the New Hampshire farmer, to raise a crop, (in which he appears to have been eminently successful,) of the root of all roots, notwithstanding President Muse's famous recorded declaration that they are "utterly worthless, composed chiefly of fibrous matter, a *simple hydrate of wood.*" Oh! what a sentiment for the president of an agricultural society to deliver! To be charitable, however, it is inferred that he never saw a crop of turnips which had been sown in proper season. From this digression I will proceed to say, that I never saw any thing more than half a crop of any root obtained by dibbling, or what is the same thing dropping seeds here and there; and early observed that the principle was wrong, and the practice productive of nothing but disappointment of a very grevious nature. Whoever is parsimonious in seed, particularly turnip seed, or beets for field crops, will reap his just reward. One pound of the former, and four of the latter, is the proper quantity which the drill in use on this farm will distribute with the utmost precision, the plants standing in the row, on an average, half an inch from each other. But why have them so thick? That is a question which has been put to me a hundred times. The answer has invariably been: You cannot obtain a *full plant in their proper places,* except there are a superabundance of them to enable you to make a proper selection when they are hoed to their proper distance. But, there is yet, another argument in favor of thick sowing. An attentive observer of the turnip crop will remark a vast disparity in the general appearance of the plants as regards strength, and of their fitness to remain, four days after they are up. How can this circumstance be accounted for. Certainly not, that some seeds are more favorably situated than others, as respects germination, &c., for it is found that plants in close affinity, present the same striking contrast, and may be noticed every where along the rows. Is it constitutional in seeds, as in animals to produce weak and strong of their kind? The writer has long thought so, from the result of several experiments he has made with different seeds, particularly the turnip, and uniformly arriving at the same conclusions, that one-fourth are unfit to be retained to stand for a crop. Hence, the importance of a liberal allowance of seed. Should the foregoing reasoning on this peculiar character of seeds be deemed by you of any importance, a further elucidation from so competent a source, would be interesting and use-

ful. In harvesting a crop of turnips, that plan is best which admits of the least handling, the operator taking hold of them with the left hand and with a strong knife in the other, trim off the fibrous roots, and top them while yet in his hand, throwing them into the furrow, placing three or four rows together, for the greater convenience of loading. It is deemed advisable to top and tail no more than can be secured the same day, choosing dry windy weather for the business. To keep them through the winter, the plan adopted on this farm is the same as the one practiced by the New Hampshire farmer, and is the very best that can possibly be devised.

In feeding turnips, my space will only admit of my stating generally that all animals except calves prefer them in their whole state. As a matter of precaution, the small ones ought to be reserved for the hogs, or cut up for the calves and yearlings, excepting there is kept on the farm an implement for dislodging potatoes or turnips from the throats of animals. It is labor misapplied, to cut or mangle roots in any form. What a business it would be to pass through a vegetable cutter the daily allowance of a thousand sheep and fifty bullocks! Animals eat them as we do apples, bite off bit by bit, with exquisite relish. What, not slice them a little for the poor little sheep? No! Positively injurious to do so. Neither for the hogs, no matter the size, the larger the better. Twenty hogs are generally wintered on this farm exclusively on this root, with a daily allowance, as near as can be guessed, of 10 lbs. each, increasing to 12 as spring advances. No corn or grain of any description is given.

The preceeding remarks are hastily thrown together for the benefit of those whom they may interest, but more particularly for the perusal of Virginia farmers, and for the author of the communication which has drawn them out.

In conclusion, a brief statement is given of the expenses incurred by the writer the present season, in cultivating three acres of Swede turnips, and presuming 2100 bushels to be the produce, a comparative statement may then be found.

Dr.

Interest on land, $100 per acre -	$18 00
Twice ploughing three acres -	6 00
Harrowing do. - -	1 00
Seed - - - - - -	2 00
Ridging, two furrows thrown together, the tops of ridges three feet apart, one day - - -	1 00
Drilling the seed, and rolling with a light roller taking two rows, one day - - - - -	1 00
When the plants have six leaves, ploughed from the ridge a light furrow each side, going as near as possible with a one horse plough, one day - - -	1 00
Setting out the plants to 10 and 12 inches apart; this operation must not be delayed five days - -	5 00
Hoeing tops of the ridges effectually at the same time, then return the furrow each side carefully; and presuming the work well done, there will be no weed alive -	1 00
Carry over	$36 00
Brought over	$36 00
In three weeks, governed by the condition of the land, run the cultivators one bout through the intervals - - - - - -	50
Then with the hand hoe, go over again, cutting out here and there weeds that have escaped former hoeings - - - - - -	50
In a few days plough out the middles, which will close the account for cultivation, one day - -	1 00
If any more work is requisite, pass the cultivator through the intervals. The harvesting of a crop of 2100 bushels, would occupy 4 men and 2 teams 3 days, say $1 each, board and wages - -	12 00
Cr.	$50 00
2100 bushels turnips at 10 cents, all they are worth for feeding	$210
Profit	160 00
	$210 00

Cost of production in New Hampshire, $128, in New Jersey, $50, difference $78.

Referring to my farm journal, for a series of years the whole cost of production has never exceeded four and a half cents per bushel.

WILLIAM BOWKER.

"JOTTINGS DOWN" IN THE SWAMPS.

(Continued from page 703.)

No. 4.

The wild swamp lands, and the lake.

Somerset Place, N. C., Nov. 23.

The great swamp of North Carolina, which fills nearly all the space between Albemarle sound and Pamlico river, was at first called the "Little Dismal," in contra-distinction to the "Great Dismal," in Virginia and the adjacent part of this state; and this misnomer of the former is still continued, though it has been long known that it is much the greater of the two. Four lakes are in the interior, of which Pungo and Alligator lakes are much smaller than Scuppernong, (which is 8 miles long and 5 miles wide,) and Mattamuskeet much larger, the latter being from 30 to 40 miles in circumference. The courses of all the streams, some flowing out of all these lakes, and the various head branches of the great swamp rivers Alligator and Pungo, all serve to show that the greater interior space of the swamp region is much higher than its borders, and that its surface descends on every side. Lake Mattamuskeet lies nearest the sound, and was most accessible. Much of the swamp land on its margin has long been drained and cultivated, but in a very imperfect manner. With this and a few other exceptions, nearly the whole of this great region still remains in its natural state, and very little of it has been explored, so as to be well known, even by bear hunters, and much less by any other persons.

Pungo Lake lies within two miles of this, and

the works for draining that lake by the government of North Carolina are now in the course of execution. I should be very glad to visit that work; but though so near to this place, it is totally inaccessible at this season; and could not be reached directly, even in the dryer time of summer, without cutting a path through much of the impervious thicket.

In the language of the residents, the lands of this great region are distinguished by different names, representing different qualities or conditions of swamp. The first is *swamp land*, which term is not commonly used, as by me, for the whole morass, but is confined to the kind covered by large forest growth, of which cypress and black gum trees are the most numerous. This is the dryer part of the general swamp, and it is sometimes so clear of under-growth that there would be no great difficulty in walking over such land, but for its wet and miry soil. *Juniper swamp*, is altogether different from what is usually meant when "swamp" simply is spoken of. But though abundant in other parts, I have met with no juniper lands in my limited view of the great swamp. This kind is merely rotted vegetable matter, and having no change or difference of subsoil, to any known depth. This is the most usual kind in the Dismal Swamp in Virginia, and was described fully in my observations thereon, published in a former volume. (Far. Reg. vol. iv, p. 513.)

Savanna land is the name given to another very large proportion, and which perhaps is the larger part of the interior or highest part of the whole region. Still, relatively to the nearest *swamp*, or forest-covered land, the savanna has the lower level, as it is more generally and deeply covered in water. The savanna has no trees, except a few scattering and stinted and ragged pines. The under-growth is of evergreen bushes, as laurels, bays, &c., vines of various kinds, and in some places is exclusively of reeds. None of these usually rise higher than about 10 or 12 feet. But the growth is so dense that it is almost impossible to penetrate it, without the previous slow and laborious process of cutting a passage through. The savanna which lies across the lake from Somerset Place extends to Mattamuskeet, and perhaps farther in other directions. The lower part of Mr. Collins' land, which has long been under forest growth, is remembered by Mr. Pettigrew to have been savanna many years ago. The change has probably been induced by the partial exclusion of the water, after the canal began to operate. I therefore infer that savanna differs from the other swamp merely in being more subject to water, therefore the soil, for the time, is still more of vegetable material, and therefore, as well as on account of its kind of growth, more often and thoroughly burnt over, when long droughts have permitted fires to spread, and sometimes to burn away the soil itself, as well as its growth.

For the purpose of having a closer view of the great savanna, as well as for the pleasure of the excursion, I sailed across the lake in Mr. Collins' nice little pleasure boat. We approached the edge within about 60 yards, which was as near as the boat could keep afloat over the shoal bottom. But no better view could have been gained even by landing on the miry soil, which is now scarcely as high as the present surface of the lake, and of course is full of water, and often overspread with it. But the wet and boggy state of the soil would have been the least of the obstacles to further progress. The covering thicket seemed so dense as to be impenetrable any where, and the sight could not have extended through more than a few feet of distance. If, however, the observer could be elevated above the low tops of the reeds and shrubs, there appeared nothing to obstruct the view for many miles. The few dwarfish pine trees, whether yet alive, or killed by fire, served but to deform the otherwise uniformly beautiful, though varied growth.

When this water excursion was made, the sun was unclouded, and the weather, though cold, bright and beautiful. The color of the lake, as seen from the shore under this sun-light, was a deep dark blue. But when sailing over it, and looking down upon the water, the color appeared to be dark brown, though perfectly clear of muddiness. When seen however, in a drinking glass, it is but very slightly tinted with the vegetable extract which gives the much darker color to all the waters of the adjacent swamp, as well as to other swamp lakes. This is therefore considered a "white water" lake, as distinguished from other swamp lakes. Contrary to what would be supposed, it is said to be the least colored when the water is lowest in the lake. It is free from all taste of vegetable or other impregnation, and is a delightful drinking water.

I also visited the savanna on the eastern side, beyond Mr. Pettigrew's farm, by walking on the margin of the lake as far as possible. The water would have then flowed a few inches deep over all the savanna, but for low dikes built along the margin to prevent the water spreading across the savanna to the cultivated back lands of the farm. And it was evident that in the present state of the lake, (which is not the highest usual in winter,) that its water, if unobstructed, would spread over all this part of the unreclaimed savanna.

Several persons though residents, and well acquainted with the ground, have lost their way and their lives in the swamp, and not far from the then boundary of cultivation. Of two who are known thus to have perished, the skeleton of one was found many years after, and identified by the remains of the iron tools which he had carried with him. Of the other no trace has ever been found. These facts, better perhaps than any general description of mine, will serve to convey some idea of the difficulties of getting through the thickly overgrown and treacherous bog, and of the lost wanderer's keeping any one course without the guidance of the sun, or some other sure indication of direction.

The irregular margin of the swamp land, shows that in storms the lake has made inroads and widened its surface on every side, but mostly in the directions to which the violent winds most generally blow. Cypress trees, still living, though for ages perhaps surrounded by water, in many places stand far from the shore. And in others, where the trees have preserved the soil, little narpromontories of high and forest-covered swamp jut out between the indentations washed out of more yielding earth. It is probably owing to this cause that the bottom of the lake next the shore is so shallow as to be left naked several hundred yards in width in the lowest state of the water. Beyond this, the depth increases suddenly, and

the central and great body of water is from 8 to 14 feet in depth. The height of the surface is reduced from 1 to 3 feet by the summer drought; and the greatest reduction known, below high water, was 4 feet perpendicular.

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No. 5.

The general plan of drainage, as executed.

Somerset Place, Nov. 23.

About 1770, Josiah Collins, the oldest of that name, together with two other persons formed a copartnership under the name of the "Lake Company." They took up nearly all the surrounding swamp land, by laying their own patents, or buying the small patents of other persons, in cases where the land had been previously thus appropriated. The only tract which is not embraced in this extensive property, (which was more than 80,000 acres,) is the farm of Mr. Ebenezer Pettigrew, lying on the lake next to Somerset Place. The interest of the two other members of the copartnership was afterwards bought out by the elder Collins (the grandfather of the present occupant,) and the property has been divided among his descendants. Somerset Place, the individual and distinct property of Josiah Collins esq. is 3000 acres, extending from the lake on both sides of the great canal into the lower and still wild swamp land in the rear. A small part only of this has been improved; and the actual drainage and cultivation extends on the lake side over several hundred acres of the share of another member of his family. But the whole tillage and management is as one farm, and by Mr. Collins; and therefore it is not of his separate property, but of the cultivated land that will be spoken of as his farm. This explanation is perhaps uncalled for; but it is made to avoid even the appearance of mistake or erroneous statement on this head.

The great work of draining on this and the adjoining and similarly situated estate (Mr. Pettigrew's,) and the great value thereby created, are matters of general notoriety; and long since I had heard of the work through verbal report, and, as I now find, very incorrect report. It had been supposed by me, from such accounts, that the object and effect of the great canal was to *lower* the level of the water of the lake very considerably, and thus to leave higher the swamp land around. This is indeed the general plan proposed by the report of the former engineer of the state, Mr. Shaw, for draining the public swamp lands around other lakes, and which plan, it is said, is now in the course of execution, by digging a canal to draw off the waters of Lake Pungo. This supposition was entirely wrong. Whatever might have been the opinions and secondary objects of the first proprietors, (the Lake Company,) the great and primary purposes of their main canal, (as are its main effects,) were, first, to provide a good navigable outlet from the lands designed to be drained, without which the future products would be valueless, because they could not possibly be sent to market; secondly, to bring into extensive use, for propelling machinery, a water power of any desirable amount: and thirdly, that the canal should serve as the final and general receiver of all the water collected by the numerous smaller drains, which are made to draw from every acre of the estate. But it is obvious that this last important and indispensable operation, of being the general receiver of the drained water, could not have been effected, except by the surface of the water in the great canal being *lower* than all the swamp land to be drained on its borders, and than all the smaller drains leading to the canal. But to have the water of the canal thus lower, (as it now is,) can only be done by commanding, regulating, and limiting, the rate of supply from the lakes. For if suffered to flow unrestrained, though the highest part of the canal is but 20 feet wide and 4 feet deep, the flood which would pass through would cover permanently and deeply nearly all the area of swamp designed to be drained. The usual height of the lake water has not been lowered but very slightly by the vast and continual draught made by the canal; and the land-holders, so far from desiring to lower it very considerably, would wish by all means to avoid that result. Even if drainage were the *sole* object, and to be attained without regard to expense—and if, with that view, the canal had been made twice as deep as this and three times as wide—though such a channel might have discharged ten times as much water, it would have been insufficient always to keep down the level of the waters to the reduced and usual height; and if, by its actual operation, the canal had left free from water, and dry enough for tillage, a narrow border of some of the highest land, it would also, by throwing an enormous, variable, and therefore totally uncontrollable flood, cover ten times as much land lying on a lower level, but equally capable of being drained by proper measures. The impropriety and danger and enormous expensiveness of this mode of drainage will be evident to any unprejudiced and careful observer.

It has been already stated that the central parts of the great swamp region are the highest parts; and much higher than the lands, whether swampy or firm, that lie nearer to the outlets of the swamp waters by streams and rivers. This and other lakes are in the central parts of the great swamp, and their waters are sometimes as high as the highest parts of the adjacent swamp. Sometimes in the dryest seasons the level of the water of this lake has been lowered 4 feet; but the usual height is generally restored by the next rainy spell; and sometimes with so much excess, that the overpouring flood spreads over the outer swamp lands, several feet deep, before it is discharged into the rivers. Such are supposed to be the general facts, as merely inferred however in part. But these I now leave, to state what I have examined in regard to Mr. Collins' drained land, of which the comparative levels and other circumstances are known with certainty.

The water of the lake is now, (though not at the highest mark,) as usually, except in dry seasons, within a foot of the highest, and is overflowing the lower parts of its natural brim, or margin; and would even now flow over the highest parts of the cultivated fields, but for the low dike which has been constructed along the lake side, and which is one of the permanent roads. From this more elevated margin of nearly two miles in length, the surface of the land, (now all dry,) is naturally an inclined plane, with a very uniform rate of depression to the side of the estate most

distant from the lake. The rate of declination of the surface, as shown by the canal, is much most rapid nearest the lake; and is equal to 6 feet perpendicular in the first quarter of a mile. Below, it is more gradual; but in the whole course of the canal, of something more than 6 miles, the fall is between 18 and 19 feet, and of the swamp land along side, nearly as much. It will be obvious, from these circumstances, that if, (for example) the depth of two feet of earth only were cut away, or removed horizontally from the margin of the lake, that a broad sheet of water of a foot in depth would be poured over the whole of the most elevated side of the land, and pass over the whole farm, (if no artificial obstructions existed) to escape at the opposite and lower side. To guard against any such invasion from water, the lake-side dike, though so little elevated as to be scarcely visible, and seeming as merely designed for the road, serves as a secure barrier. This very regular inclination of the surface of the land, with the supply of water at the top, would permit the easiest, and the most abundant as well as extensive irrigation of any yet effected by art, if the aid of watering should be desired hereafter. It is upon this general and regular inclination of the land that the scheme of its drainage was founded, and on which its successful operation depends.

The digging of the great canal was the first work, and this was completed about 60 years ago, by the Lake Company, at a cost of $30,000. Its course is perfectly straight, so far as visible on the farm, and is at right angles to the side of the lake where it enters, and its direction is with the greatest descent of the surface of the land. To a quarter of a mile from the lake, where the water-power is used for the mill and other machinery, the level of the water is kept up, for a head. To that point, the water is kept in by its banks, and stands at the mills 6 feet higher than the cultivated fields on both sides. Below the mills, the water of the canal is lower than the adjacent land whenever the mills are not at work, and the full flow of water restrained; but higher when that flow is used or permitted, which is usually the case, except at night, and in wet seasons when it is necessary to afford a continual outlet to the rain from the fields. The canal receives the water collected from the land by nearly all the drains, through three several and remote channels; of which the two on the higher levels are kept shut, by close flood-gates, when the mills are grinding and the canal receiving its full supply from the lake, and are opened whenever that supply is shut out by a flood-gate across the canal, near its junction with the lake. Thus all the water collected by drains from more than 1200 acres of the arable land is shut in usually through every day, and only permitted to run out at night; and that the accumulation in the lowest ditch is not enough to hurt the arable land, is the strongest evidence of the dry state of the reclaimed land. The third passage into the main canal enters so low down, that it is left open at all times, the water in the canal at the junction being the lowest where this supply enters. There is also another place of discharge from some of the drains most remote from the canal, at the opposite side through a small arm of Scuppernong river, which originally was the only natural channel, in usual seasons, of the surplus water of the lake.

There are five main drains, 8 feet wide, running through the land parallel to the canal; these are crossed at right angles by "leading ditches," 6 feet wide, and at distances of a sixth to a quarter of a mile from each other. The banks of these leading drains are all thrown on the side towards the descent of the surface. Of the "lake side ditch" which is also nearly parallel to these, the earth dug out was thrown to the opposite side, towards the lake, to help to form a road there. The design of this is different from the leading ditches, it being to catch the water which oozes under the road embankment, from the much higher and adjacent water of the lake. The banks of all these main drains and of the leading ditches crossing them are formed into good and permanent farm roads; and these roads, together with the main road of the farm, amount to 24 miles in length, and of course there are as many miles of the large drains. The rectangular spaces formed by these great drains, are again intersected by three-foot ditches running *down* the slope of the land, and emptying into the leading drains below; these are crossed by small and shallow "tap ditches" (such as are elsewhere called "gripe,") at every 50 yards distance. Finally, the entire surface is ploughed into ridges, for corn, of 5 and 6 feet, with good water-furrows between. Thus the water-furrows collect all surface or rain water, and discharge it into the shallow tap ditches, which empty into the deep 3 feet ditches, and these into the 6 feet leading ditches, these into the 8 feet main drains, and these into the canal, or the other and natural outlet. The tap ditches are only about four inches lower than the water-furrows, and do not obstruct the passage of the teams and ploughs. They are easy to dig, but require cleaning out after every ploughing of the field. The three-foot ditches are 2 feet deep, and the two larger kinds are 3 feet or more, and the canal, 4 feet. The water is so directed that each large drain discharges its proper share. All these kinds, from tap-ditches to main drains, amount to 130 miles in length of ditching, on the farm of 1400 acres drained and cultivated. The whole operation of the drainage seems very perfect. The soil, considering the loose texture of much of it, and its absorbent character, was surprisingly dry; as dry indeed as such soil, and of such a level surface, could have been expected to be, if free from all higher water.

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No. 6.

The soil, and its former and present vegetable products.

Somerset Place, Nov. 25.

The labors executed by the present proprietor in the short time that he has had possession (11 years) have been great, even for the large force and capital employed; and the performance has been the more remarkable as being conducted by one who was very young, and totally inexperienced. He has drained, and brought into cultivation 500 acres of the now cultivated arable surface of 1400, besides other and perhaps as arduous labors, which are not required on other kinds of lands. One of these was the clearing up the dead trees of much land drained before his arrival, in addition to that labor on all the newer part.

The killing of the trees of the natural swamp forest, and grubbing and removing the shrubs and small trees, is comparatively but a light job. But until the last of the gigantic cypresses so left yields to the wind, and is prostrated, there is a yearly recurring labor required to remove the fallen trunks.

The great size of the old cypress trees generally, and of other trees also, but more rarely seen, is beyond the expectation of any one who sees them for the first time. Very many are five feet through the body at 4 to 6 feet from the ground, and would carry a diameter of 3½ to 4 feet for 40 to 60 feet, the length of their trunks. Some cypress trees are much larger than these sizes. One in the field I was told was 30 feet in circumference, as high as the measurement could be conveniently made. The age to which they live, and their durability after death, are not less remarkable than their size. Mr. Collins has counted on the sawed end of a cypress log, more than 800 rings of the grain, showing as many years of growth; and as this and others that he has counted were by no means of largest size, he supposes that their ordinary and natural term of life must be 1000 years at least. But this estimate does not go back to the earliest existence of some of the dead trees, by many centuries. There has been at least one generation of cypress trees which lived and died here before the oldest of these now standing sprang up. Of this fact I was shown several sufficient proofs, of which I will state the case proving the most ancient date. A trunk of a cypress, long dead, but still standing firmly in the cultivated ground, had been found by measurement to be 33 feet in circumference at 3 feet above the present surface of the ground. The surface probably has been lowered nearly as much as from the mark of measurment stated; and this has exposed the upper parts of the roots of the tree, and also the before buried body of another prostrate and large cypress, over which the trunk of the standing tree had grown. The visible wood of the buried tree is still sound. These "ground logs," as they are called, are so numerous under the swamp soil, that it would seem as if the trunks of the more ancient forest, thus buried, were as many as the trees now standing above them.

The whole of the reclaimed land was, when taken into cultivation, of what is called "cypress and gum swamp." The soil to the depth of 2½ or 3 feet, is very much like that of the newly reclaimed tide-swamps of James river, and is as much formed of vegetable materials. When new and in a dry state, this will take fire, and burn to the depth of 18 inches or more. But open and "chaffy" as is this vegetable soil when first cultivated, it produces very heavy crops of corn. The subsoil is of compact blueish clay, which becomes friable and fertile soil by exposure; but for this subsoil, the soil could not, as I think, be deemed a permanent possession. But there is enough elevation to spare several feet without injury in that respect; and when the soil has rotted away, as it does in time, and allowed deep ploughing to bring up the clay subsoil to the surface, a still better, and what I suppose will be a permanent soil, is thereby formed. In the oldest cultivated parts, the extent of this loss of soil and depression of level, though greater there, cannot be measured or estimated. But in the land cultivated this year for the first time, though drained long before, the mark of the former surface can be fixed by the dead trees and stumps whose roots are now so far naked as to make it evident that the surface is already two feet lower than formerly. Yet the material of this soil, though rotten, is but little decomposed; and must lose much more in bulk before it is brought to the state of fine black mould, like the land which has been brought under tillage ten years or more. The first ditches which are dug in a new piece will barely reach the subsoil; but with every year's cleaning out, a little more of it is dug up, until most of the depth of the ditch is in the subsoil. But this rotting away, which would render entirely worthless (as it does our tide-swamps and marshes) any land which cannot spare 3 feet of its upper soil, is here productive of no greater evil than the necessity of continuing to deepen the ditches, so as to keep their bottoms as much below the subsiding surface as at first. This land will sometimes bring 12 barrels of corn to the acre, and often as much as 10 barrels. This year the crop is very inferior, owing to the ravages of the chinch-bug, and Mr. Collins supposes that it may not average more than 5 barrels. From the size of the stalks I should have guessed a much heavier product. The largest crop which he has made in any one year was upwards of 8000 barrels. The land nearest the lake is stiffest, (or seems to partake more of the nature of the subsoil,) and is the most productive in wheat. A particular portion has been known to produce 37 bushels of wheat to the acre. Still however, this crop has been so uncertain that Mr. Collins has recently abandoned its culture, except on a small scale, for home consumption. One important cause of failure is the great growth of partridge pea. Another plant which grows with remarkable vigor is chick-weed, which I have not seen abundant any where else. Here, after corn, it usually covers the whole surface with a thick matted though low growth, and being a vine, clings to and runs upon every thing within its reach. It is now green and in full vigor. It serves as excellent winter pasturage for sheep.

In a small part of the land, the trees had been cleared away at once, by being cut down, instead of the ordinary slow and gradual course of "deading" them, or killing them by cutting slightly around, and then letting them stand until overthrown by the progress of time and decay, aided by the force of the wind in storms. The former course has been found to be very objectionable, and is abandoned. The large cypress stumps will remain to encumber the ground for 50 if not 100 years, and more than any other tree, even if equally durable, because of their large size. All the roots of the cypress strike downward and deeply, none running horizontally or nearly so. Hence, even after the surface of the earth around may have been lowered by decay a depth of two feet, and of course as much of the formerly underground parts of the cypress exposed, still the lowest part appears to a stranger to be not of root, but of trunk, and merely shows a still greater enlargement of the always broad pedestal to the mighty column. Thus there are but few dead cypresses, or their stumps, which do not spread across the width of a five-foot ridge, and obstruct one if not two water-furrows; and many of the largest extend across more than double that width, and of course are serious impediments to the

drainage of the obstructed water-furrows. Long as the cypress resists rotting, it is a very brittle wood, and is very easily broken by storms. Scarcely can a large living tree be seen in the original forest of the swamp of which the top has not been broken off by wind, and replaced by a subsequent growth, of different form. And the dead trees left in the drained land are generally soon divested of branches and tops, and reduced to a naked trunk of 40 to 70 and 80 feet high. This resists the wind much longer; but finally, by the decay and weakening of the roots, they yield, and the trunk falls. The roots are broken in such cases not far below the surface, and the blowing down of the decayed tree leaves no deep or considerable hole in the earth where it stood. I saw measured one of the recently overthrown and broken trunks, which was 72 feet long, and all of clean body, below the lowest branch. This was 5 feet through above the swell near the root, or where the regular and very gently tapering form began. Another of less length of trunk was 6 feet through the body, measured as above. These were not selected as being of uncommon size, (for very many in the forest are said to be much larger,) but merely to serve as standards of comparison. For without using some such mode of comparison, a stranger would be deceived as to the general size. If one only of these great trees were found elsewhere, its size would strike every beholder with astonishment, and it would be supposed greater than it really was. But here, they are so numerous, and the forest growth and every thing else is on so gigantic a scale, that the eye has no accustomed and known objects by which to measure dimensions so large, and, by a slight and hasty observer, all objects would be supposed smaller than they are.

Rice was cultivated here by the Lake Company, to considerable extent, and with good success. But the culture was found to cause so much sickness among the slaves, that it was abandoned. The successive parallel slopes, ditches and embankments, formed by the "leading ditches" which run across the ground, afforded great facilities for flooding the land, and drawing off the water when desired, for rice-culture. Subsequently, corn was the main crop, and cultivated for a long time successively on the same land. The present proprietor has found the very long continuation of this crop objectionable, and has commenced, as a regular course, to cultivate corn for three years in succession—and then to let the land lie out of tillage three years, and be grazed in the middle one of these three years. He is very careful to cover up in the soil for manure all the rank growth of weeds, which now stand 7 to 8 feet high; and also the corn-stalks, shucks, and the growth of grass underneath, when corn is again to follow the next year. To effect the object, and enable the plough to cover so heavy a growth, it is first weeded off the beds (5 and 6 feet wide) by broad hoes, and drawn into the water-furrow, and then two furrows of a plough are run to throw the slices so as to meet on the weeds. This is very roughly and imperfectly effected; and after standing a while, two more furrows are cut in the same places, and the earth thrown again over the weeds, and then the balance of the old ridges reversed and the new ones finished. The corn-stalks are cut off and drawn with the grass into the water furrows, in the same manner.

No. 7.

Uses of water power. Mr. Pettigrew's farming and improvements.

Somerset Place, Nov. 25.

The extensive use made of water to save labor on this estate, is one of the most interesting subjects for observation. It has been already stated that the descent of the canal gives a head of 6 feet of water at the mills, at the distance of a quarter of a mile from the lake. Part of this power works a saw mill, and a corn and wheat mill of two pair of stones, with the bolting, and other machinery, &c., proper for the making of flour. Also the corn is shelled and fanned, and, though not now, formerly the wheat was thrashed, and cleaned by the water-power conducted to the barn and one of the great corn houses. Besides these more important operations, and for some of which there is daily use made of the water-power, it is also directed to crushing and grinding corn in the ear for horses and other stock, the working a circular saw, turning grindstones, and may be substituted for hand labor in various other ways. When it is desired to prepare a cargo of corn for the Charleston market, there is no need of commencing until notice has been received of the vessel having arrived in the river below. The shelling of the corn is then commenced, by a shelling machine of immense power, then fanned, next lifted up by elevating machinery, from the first to the fourth story of the house, there measured, and then emptied through a spout into a large flat boat lying in the canal, which, as soon as loaded in bulk, is conveyed along the canal to the vessel. Thus the risk of keeping a large quantity of shelled corn in bulk is avoided, and, by the aid of water, all the operations necessary to load a vessel may be completed in a very short time.

It is not only the main canal that is used for navigation. The "leading ditch," nearly two miles long, which passes through the barn-yard, is made 12 feet wide for that purpose also. When crops are made on that part of the farm, that ditch is flooded by letting in water from the lake, (by a ditch communicating with the lake, and commanding the water by means of a guard gate,) the wide ditch is kept full by closing another gate at its outlet, and the crops of corn or wheat are brought to the barns in flat boats, with comparatively little labor.

There are three barns, or rather houses for holding grain only. Two of them, for corn, are of great size, and constructed with all the care and strength of materials necessary to resist the pressure of the weight of the contents. One of these is 100 feet by 60, and three stories high. The other is 80 feet square, and has 4 floors or stories above ground, two in the body and two in the roof.

It is to me a matter of regret that I cannot see Mr. E. Pettigrew, and acquire something from his store of experience and varied information, and especially as it regards this place, where he has passed his life, from boyhood to old age. He is absent from home. Mr. Pettigrew, the elder, commenced his labors, some 40 years ago, under all the disadvantages of his neighboring proprietor, and with the great additional ones of very limited capital and a small and weak laboring force. Under such circumstances, the extent and value of his drainage, clearing and cultivation and other

improvements, are wonderful, and his labors have been as profitable as they are admirable. The general plan of drainage is the same on both estates. Mr. Pettigrew formerly drained into Mr. Collins' canal; but has since constructed his own canal, of 15 feet width, which he uses in like manner both for navigation and for propelling mills and other machinery. He cultivates wheat successfully and on a large scale. As I am informed, he is an excellent manager and cultivator, and, besides his swamp improvement here, he has recently drained and brought under good and productive tillage a large tract of the "body land," and thereby created a fine farm, and an entirely new and rich source of agricultural production. If he who merely makes "two blades of grass to grow where one only grew before" is a benefactor to his country and to mankind, how much greater is his service who drains a swamp, or converts a worthless waste into a fertile farm!

Mr. Charles Pettigrew, the son, was also from home during the first days of my sojourn at Somerset Place. His return however enabled me to give a slight and rapid glance at his father's lake farm, but which was too much harried by want of time, and also by bad weather, for me to attempt doing justice to its description, and therefore the attempt will not be made. I will merely offer a few notes on some of the most striking objects.

The farm of Mr. E. Pettigrew lies alongside of his neighbor's, and their mansions are not half a mile apart. In both, there is the like position of the buildings near the border of the lake, and the same general plan of drainage. Mr. Pettigrew's main canals being smaller, (15 feet wide) he requires more of them. Accordingly, he has already two, parallel to each other, and together about nine miles in length; and is he about to dig another which will be nearly half as much more. Part of his drained and cleared land was of savanna, as is still the wild land immediately adjacent. The soil of this field is as black, as rich, and seemingly as valuable, as the best swamp. It is now suffering from the access of water from the unreclaimed savanna, which will be remedied by the designed canal. But this land has produced 10 barrels of corn to the acre, and when the remedy is applied, will do so again. The rotation here is the three-shift, without grazing; or 1st year, corn, 2nd, wheat, and 3rd, the natural weeds, which grow so rankly, (6 to 8 feet high, and very strong,) that the three-horse ploughs, which are used to break up the field for corn, cannot possibly turn them under without a previous operation. This is effected by the "weeding down" process mentioned in his neighbor's practice. The land is kept always in beds of 6 feet width. with deep and clean water-furrows between. The weeds are cut off by broad hoes, and drawn into the water-furrows, and then well covered by the meeting of the first two furrow-slices, made in reversing the beds.

The lake side of both the adjoining farms is alike protected by a low dike. This dike, with the bridges across the canals, forms a continuous road for two miles along Mr. Collins' farm, and apparently as much more along Mr. Pettigrew's. This road keeps near the lake shore, and forms, both by its situation and its decorations, one of the most beautiful and extensive promenades, either for walking or driving, that I have ever known. The road is perfectly level in its course, firm and dry. It is planted throughout on the side from the lake with rows of trees, which are of different sizes according to the date of the clearing of the fields along which they are planted. One of these rows, on Somerset Place, a mile in length, is of tall and noble sycamores, all of the same age and of very equal size. Another very long row of the large sycamores is on Mr. Pettigrew's part of the road. On another part of his, young cypresses have been left where growing naturally, and where deficient set out, on both sides, so as to form an avenue. Between the road and lake is a narrow and irregular margin, under its natural and the usual swamp growth, among which are some trees of very large size, and others as remarkable for their grotesque form.

Neither the road dike nor the margin outside, fringed as it is with trees, could serve as a protection from the violence of the waves, were it not for the shallowness of the lake for several hundred yards from the shore. On this wide shoal the billows are broken, and their violence expended, before they reach the land. Still, were it not for artificial safeguards, there would be yet left enough of power in the dashing of the broken and scattered spray, to produce great changes and do much damage to the land. This is exhibited along the lake shore where the swamp and its forest have not been touched by man. There, the deep indentations of water in some parts of the shore, and the ragged points of high swamp, wood-bound and defended, stretching out at other places into the lake—with the monuments of more ancient and extensive devastation and change presented in the position and forms of the old cypresses which stand alone and still living, though far out in the lake, or serve to protect by their roots and spreading base some yet remaining points of swamp—all show the great encroachments which the water has made upon the land. After suffering much damage from much slighter operations of this kind on the drained land, and the most strongly constructed defences having been found insufficient to resist the waves, Mr. Pettigrew discovered a mode both effectual and cheap, and which is used on both estates at every exposed point, or wherever the bank is so low as to need earth to raise it. The means used are "brush-bars," which are formed in the water close to the shore, by merely driving down perpendicularly a double row of small stakes, the rows two or three feet apart, and the stakes as far apart as will serve to hold the limbs of trees, or any rough and small brush laid between the rows and packed down closely, and rising a little above ordinary high water. The whole is made in the roughest and apparently slightest manner. Still, this feeble barrier serves not only to prevent the invasion of the water, but to repel it by forming more land. Perfectly clear as the water usually is, its violent action on the bottom in storms renders it muddy; and its sediment is left landward of the brush-bars, in such quantity as to form a considerable though slow accretion to the land by the deposite. It may well be conceived that the obvious and continual operation of the winds and waves for thousands of years may have greatly enlarged the surface of this and other such lakes, while it also increased the elevation of the swamp

land on the margins by throwing over them and leaving the earth which had been suspended in the water. The sediment being derived from the bottom of the lake, is doubtless composed principally of such earth as forms the stiff subsoil of the swamp lands. The earth most recently deposited thus by the water has a singular appearance, and shows that the earth must have very peculiar texture and qualities. The fine and fluid mud left in the hollows of the ground behind the brush-bars, after sufficient exposure to dry weather, hardens and cracks, and separates by contraction into numerous pieces of a few inches across. When these pieces are not more than a quarter of an inch thick, they will become curved or curled by the further drying, and in color, shape, and almost in hardness, seem much more like a piece of old shoe-sole, or some other piece of long exposed leather, than earth or soil. After being again wetted by exposure to steady rain for 24 hours, I found these pieces to be softened, and made flexible and somewhat elastic; but they had not lost any thing by the washing of the rain, and hardened as before, by drying. This same earth is found in small pieces, like angular gravel, on the surface and throughout the upper soil of the lands recently brought under cultivation.

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No. 8.

The negroes' chapel and religious services. A short lay sermon to the clergy.

Somerset Place, Nov. 26.

If my notes were other than agricultural, or on such matters only as are in some degree connected with agriculture, and if it were ever allowable to speak thus publicly of the private scenes and social habits to which confiding and frank hospitality had afforded free access, I might mention many more subjects presented in the mansion of my host, and the circle of his family and visiters, in strong contrast to the savage wildness of the natural locality, or to the general absence of intelligence and refinement in the surrounding population. Far be it from me to treat of such matters, even though nothing should be uttered but in commendation. But there was one subject of observation which may be made a proper exception to the foregoing rule of conduct, and which offers a lesson of wordly policy, as well as on duties of immeasurably higher importance, to the agriculturists and slave-holders of the south.

On Sunday, the family and visiters designed to attend the performance of the customary public worship at the old neighborhood chapel a few miles without the swamp. But just before the time to set out, rain began to fall, and going abroad was thus prevented. It was therefore that I was invited to attend with the family the service in the negroes' chapel, which Mr. Collins has erected for the use of his slaves. A clergyman of the episcopal church resides here, principally for the purpose of imparting religious instruction to the slaves, but who also officiates at the church in the neighborhood.

The negroes' chapel is a rude and rustic, but neat building, white-washed without and within, and provided comfortably, but in the plainest style, with the accommodations necessary for the congregation, and for its sacred purpose. There is room for 200 persons, and I was told that sometimes it is filled. But at this forenoon service, the house was not half filled, though the number still was as large as country congregations usually are. There was too about the customary proportion of females to the males present, or about thrice as many of the former as of the latter. This alone would have told, if I had not been so informed otherwise, that the attendance of the slaves is altogether voluntary. Every thing is done to invite and persuade, but nothing to compel their attendance. One means, and I should think the most efficient, is that the master and his family regularly make part of the congregation, when not at the more public chapel, and they participate fully in the services, and acts of worship.

The clergyman being engaged abroad, as always at the forenoon service, his place was supplied by another member of the family, who is licensed as a lay reader, and is also a candidate for the ministry. The service was according to the episcopal form; and never on any other occasion has it appeared to me more impressive.

In the evening, the congregation again assembled for a still more solemn service. The black audience was much larger than before, but still composed only of slaves belonging to this and the adjoining farm. The bishop of North Carolina, was a visiter of the family, and his presence, I presume, had induced this appointment for administering the sacrament. He was present in his episcopal robes, and after the ordinary service, performed by the resident clergyman, the bishop delivered an address on the service about to be performed, equally and admirably suited to the dignity of the subject, and to the humble powers of comprehension of the greater number of his hearers. The officiating priest then administered the sacrament to all the communicants present, including the bishop, the master and several of his family, and about thirty of the slaves.

It was the first time that I had ever been an attentive witness to the performance of this solemn ceremony; of course I am altogether unworthy to appreciate it, and unfitted even to describe it. But never have I elsewhere been so strongly impressed by any religious service, or by any pulpit eloquence, as by the unostentatious ceremonial of this humble house of worship. Nor have I ever before had so forcibly urged upon my understanding and sense of duty, what we owe for affording the means of religious instruction to our slaves, and the high importance, and the excellent effects as here proved, of such instruction.

Why is it that, by the many who have undertaken the sacred duties of preaching the gospel, and laboring for the salvation of souls, so few and such feeble efforts have been made to give religious instruction to our slaves? The excuse which I have heard made, in answer to this question, is, that the owners of slaves might probably view any such efforts with suspicion, or perhaps meet them with hostility. As a slave-holder, and one professing to know something of my fellow slave-holders, I pronounce that there is no ground for such an opinion, or excuse. The assertion of the existence of any such general or considerable opposition, shows either gross ignorance, or otherwise is a foul slander, for which there is not a semblance of

foundation. And even if there were some few narrow-minded slave-holders who would object to such advantages being offered to their slaves, is that any reason or excuse, for one who assumes to be a minister and messenger of God, to withhold his instructions from those slaves whose masters would receive them with welcome and thankfulness?

It is a fact universally admitted, and deplored by all considerate persons, whether christians or not, that throughout lower Virginia, the ministers of the gospel, of all denominations, are very few, and their usual congregations, or number of hearers, very small. Still there are many such persons who are passing their lives and complying, as they think, with their holy calling and vows, in regularly preaching once a week to a few dozens of hearers. Yet if these preachers deemed it their duty to labor as much for the salvation of blacks as of whites, there is scarcely one of them so situated that he could not easily find hundreds to instruct, who, unless so sought and invited, will perhaps never hear his voice, and certainly not profit by his ordinary and public ministerial services. Nay, there is scarcely one of these country ministers who at his very place of residence, or temporary rojourn, could not assemble an audience of slaves belonging to the farm, of greater number than he usually can collect of whites from all the neighborhood. And if any true zeal were felt and manifested for so excellent an object, ministers would find very many slave-holders, and even irreligious slave-holders, who would not only *permit* the performance of these truly apostolic labors, but would rejoice to have them performed, and (what I fear is more to the purpose,) would also be willing to *pay* for the performance.

If the owner of a hundred slaves, or a hundred thousand dollars, shows any disposition to receive religious instruction, what assiduous care, what devoted zeal, will not be shown for his eternal welfare! But while the greater part of the time and all the ability and power of persuasion of a minister would be willingly devoted to clear away the darkness, and strengthen the feeble striving, of such a penitent, and to aid his novitiate in a better course of life, his numerous and ignorant slaves, on the same ground and perfectly accessible to the preacher, would be scarcely thought of by him, and would derive no benefit whatever from his presence!

If an inference were to be drawn from the general course of procedure only, or of omission and neglect in this respect, by the greater number of those who have undertaken to perform *all* such duties, and who claim the sacred character of God's ministers, and messengers of salvation to all sinners—(and if in no degree corrected by the knowledge of any such meritorious and admirable exception as was described above—) the inference would be, either that it was a general article of belief among christian preachers that negroes had no souls to be lost or saved, or, if otherwise, that the souls of a hundred poor slaves were of less value, and had less claim upon their spiritual care, than that of a single individual of elevated grade in society.

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No. 9.

The Belgrade farm. A corrected view of the "body land."

Nov. 28, 1839.

Having postponed my departure to the latest day that the claims of my business at home would permit, on the 27th I left Somerset Place to take passage in the steamboat at Plymouth at night, and to proceed homeward as rapidly as I could be conveyed by the several connected lines of steam navigation and railways. Mr. Pettigrew the elder had arrived at his Belgrade farm (7 miles from the lake,) the evening before, and had sent me so kind and urgent an invitation to call on him the next morning, that I could not do otherwise, although there would be less than three hours to stop there. The short time so given was spent in conversation which was necessarily very hurried, and at the same time walking rapidly over the farm and taking a glance at its condition and improvements; and thus at the same time giving sufficient employment to our eyes, feet, and tongues. But however gratifying it was to me, even in so hurried a manner, to make the personal acquaintance, and listen to the interesting remarks of Mr. Pettigrew, the opportunity was altogether insufficient for me to gather either, by observation or other mode of information, any thing in detail, to which I could do justice in reporting. I have requested, and hope the request may not be slighted, that Mr. Pettigrew will hereafter furnish me in writing something of what I had not time to obtain by personal inquiry and observation.

The weather was very cold for the season and latitude. The earth everywhere in the shade was hard frozen, and in the sun-shine the surface had just thawed, and of course was wet and adhesive. Both these conditions were as unfavorable as possible to the exhibition of the characters of the soil. Still, it required but a few minutes' observation to show me that I had been totally mistaken in my earlier opinion as to the nature and constitution of the "body land," formed upon merely travelling over another part which is in very inferior condition. Merely from the appearance of the surface on which I walked, and still more from the deeper soil and subsoil exposed in Mr. Pettigrew's ditches, I would have been convinced that this "body land" is not a clay soil proper, nor naturally a firm or high-land soil of any kind, but that this also is of swamp formation, though greatly and for a long time altered by the operation of natural causes. The whole surface is even more level than the existing swamps in general; so much so, that from one part of the tract which I saw, the surface water formerly and naturally was discharged towards every side, to seek outlets in different streams. The now artificial discharge by deep ditches is directed just as convenience requires, and might be made without much additional difficulty towards any point of direction.

The general plan of drainage is the same as that used at the lake, by drains of different sizes crossing each other at right-angles, and the smaller emptying into the next larger. The water-furrows between the narrow beds may be considered as the smallest drains, which first gather and discharge the surplus rain or surface water, though merely made by the plough in the ordinary course

of tillage; and the ten-foot ditches are the largest and ultimate receivers which pass through the fields, and the fifteen-foot canal without, into which all the water is discharged, and thence into Scuppernong river. The main canal also serves for navigation for delivering the crops. Indeed, as every such main canal must connect with a navigable river, there must be the means of intercourse by navigation between every two properly drained farms in this part of the country.

The soil and subsoil, though, as stated above, apparently of swamp formation, have no resemblance to any of the drained swamp near the lake. The "body land" in its forest state, has no cypress or other aquatic trees, but has a considerable proportion of large oaks, intermixed with poplars, sweet-gum, beech, and other trees usually found on rich and low or alluvial, but yet firm and usually dry lands. Nature and time seem to have produced here such a change as may be supposed would take place in the great swamp, by its being relieved from superabundant water for the duration of some thousands of years. The upper soil being principally of vegetable material, would, in the course of time, rot down to a state of finely decomposed parts, and close texture; while the former forest of cypresses would die and give place to trees preferring dryer soil. Such seems to be just the natural state of the Belgrade land, and I presume it was that of the great "body" of which it forms a part. And for just such a change of natural circumstances to be made, it is only necessary to suppose that Scuppernong river, the present great outlet, was formerly so obstructed that the level of the back water was kept several feet higher than its present elevation.

The ditching of Mr. Pettigrew has been executed in the best manner, and his labors of cultivation seem to be scarcely inferior. The soil, though so stiff as to be best suited for wheat, yet will bring as heavy average crops of corn as any known in this country. I saw a field of 40 acres, from which had been measured a crop of 10 barrels average to the acre, and part of which probably brought 11 or 12 barrels, as another part fell much below the general average.

The supposed ancient change of this land, from its still more ancient condition of a swamp saturated or overflowed by water, is my own hasty speculation, and which I should not leave it to be inferred that Mr. Pettigrew is responsible for. But some interesting facts, of which he informed me, go for to sustain the supposition. In his now cultivated fields there were several shallow ponds, varying from half an acre to two acres in extent. After these places had been laid dry by ditches, and brought under cultivation, by digging into the soil, charcoal and ashes were found, showing conclusively that these depressions had been made by the burning of the earth to that depth, such as occurs to some extent in the great swamp, and especially the savannas, in every very dry season.

Next, as to the extent of operation of such action as might have lowered or consumed the surface and consolidated the soil of a swamp when relieved of its former overflowing water. Mr. Pettigrew told me that in the years 1805 and 6, the longest and greatest season of drought which he has had experience or report of, the great swamp was dry for 18 months together, and the water of the lake sunk 1 feet below its highest mark of a full head. During this long time, fires were continually raging in some parts of the swamp, and even passed over the same parts more than once in the time, as the state of dryness increased, and the combustible material was thereby deepened. In a particular part of the land adjoining Mr. Collins' canal, which was before described as being now covered with laurel trees, Mr. Pettigrew knew that the soil continued slowly burning for 12 months together. When at last the rains again saturated the swamp, and the superabundant water flowed thence into the lake, the water of the lake was at first so deeply colored as to stain cloth that was washed in it, and it was feared that its previous quality was lost forever. But this condition was merely transient; and it was not long before the water was restored to the state of purity which it had before, and has since retained.

And now I have to bid farewell to the swamps. And if I may venture to imitate the manner used by old Fuller in his different "farewells" to the counties of England, after discoursing of their "worthies" and their peculiarities, my farewell would be of this fashion:

May the proprietors of the great swamp region, who are poor, copy the untiring industry and "indomitable perseverance" (to use his neighbor's words,) of the older of the two lake-side proprietors; and may the rich copy the liberal and judicious expenditures, and the enterprise of the younger; and may all profit by the intelligence and foresight, and enjoy the success, of both of them. May the swamp waters be diverted from their present operation of drowning land, and destroying fertility, health, and life, to the conveying the richest and most abundant of new products to good markets; may the soil be changed from being the poisoner of thousands, to be the feeder of millions. May the people of the good commonwealth of North Carolina acquire and maintain the energy requisite for these and other great works to make useful the now obstructed and dormant but mighty resources of the state; and may their government possess the wisdom and sound discretion which may safely direct the good work.

LEGISLATIVE AID TO AGRICULTURE.

Extract from Gov. Noble's Message to the Legislature of South Carolina.

In giving you "information of the condition of the state," I should feel that I was justly obnoxious to the charge of neglecting one of the most important branches of industry, were I to be silent on the subject of agriculture. This pursuit of the great mass of the people has claims upon your fostering care and attention. It is the source of our wealth and power, and furnishes the means of our commercial exchanges. Yet its importance seems never to have been realized by the constituted authorities of the state; for it is a lamentable truth, that while other branches of industry have received an impulse by wholesome laws, the great interests of agriculture have been passed by, almost with silent contempt. It is now time for the state to dismiss from her counsels this cold indifference, and to take such action on the subject as will promote its success. In exploring the causes which have retarded the progress of the state in

population, wealth, and importance, none is more prominent than the utter neglect of this primary pursuit. It cannot be doubted that South Carolina once possessed a soil of unsurpassed fertility. But this rich gift of a kind Providence has been, in a great measure, lost, by a most pernicious course of husbandry. A large portion of this once flourishing region, blessed, too, with a propitious climate, has been reduced to sterility. Yet, all hope of reclaiming and restoring to its wonted productiveness, our exhausted soil, is not in vain. It is a beneficent provision of a good Providence, that beneath the surface of the earth are to be found substances of the most fertilizing qualities. Their discovery, however, requires the application of science, and means seldom possed by individuals. It is in such a case, that a wise and patriotic legislature should extend its aid. But to subserve fully the interest of agriculture, the legislature should not confine its operations to a geological survey alone. With this should be connected an agricultural survey. While the former would bring us acquainted with all the substances which enter into the composition of that portion of the earth to which we can have access, the latter will elicit a mass of information in relation to every thing that concerns agriculture, which cannot fail to be highly useful. In other countries, the utility of agricultural surveys has been fully proved, by the valuable results. But, in carrying into effect such surveys as have been mentioned, the value of the results would depend upon the selection of an individual possessing the highest qualifications, combining a profound knowledge of the subjects of investigation, a sound discriminating judgment, and an untiring zeal and industry. The expense of such a project, should not be weighed against the incalculable importance of the end proposed. Being deeply impressed with the practical usefulness of such surveys, I earnestly recommend that you provide for their accomplishment.

AN EXTENSIVE PIGGERY.

From the Farmers Monthly Visiter.

We visited one establishment near the Spy pond in West Cambrige which will be thought remarkable; it was on ground very near the precise spot where, in company with a grandmother and some elder female cousins, at the early age of five or six years, all of us got lost and wandered in terror late in the afternoon, in a swamp of the high blue-berry bushes. It is now a place for hogs, where no less than nine hundred of these animals, from the smallest size to the lusty two-year-old weighing eight hundred to a thousand pounds, are kept. And how will the reader suppose so many devourers could be sustained pent up in a pen of not more than one or two acres, without starving? It is in this wise:—Some five or six years ago the proprietor of this hog establishment engaged to pay the municipality of the city of Boston twenty-five hundred dollars a year for the delivery on the spot of the offal collected from the kitchens of the several families in the city who had not other means of disposing of it. This offal was fed out daily to as many swine as it would keep. The first contract of two or more years turned out to be of great profit to the proprietor. A second contract was made, and the sum was advanced to thirty-five hundred dollars a year, and the proprietor is taxed a further sum of about five hundred dollars a year for tolls, as he is compelled to pass out of the city over Craigie's toll bridge, the town authorities of Charlestown not permitting the offensive matter to be brought over the Warren free bridge, which leads directly through the compact or city part of the town. With the increased expense, the proprietor has made his thousands every year. The feeding is said to be equal to the rearing of one thousand hogs in a year, weighing three hundred pounds each. The hogs are taken from this feed and fed on corn a few days before they are slaughtered for the market, so that the most astute pork eaters cannot possibly distinguish between the meat of these and the best family-kept hogs of the country. If the keeping was all the cost, at the high price of ten cents the pound, which has been the lowest price for pork in the market, the income would be thirty thousand dollars a year. The price of pork, now reduced as it is to six cents the pound, will still furnish a grand profit to the owner of the West Cambridge piggery.

The profit on the hogs is not the only gain of the establishment. The manure here made has had the effect to double the value of the land all around it, to the distance of half a mile or a mile. Six large wagon loads of offal, containing, with much that is offensive, much of the best living of the luxurious livers of Boston; remnants of roast turkeys, roast beef and plum-puddings, with now and then a silver spoon and fork, are daily brought to the piggery. They are spread at three different times in the day over a large plank platform on which the animals feed. Six farmers of the town contract daily at the price of two dollars and a half per day for the leavings upon the platform, each taking his turn on a different day of the week (Sundays excepted) in filling a large wagon such as every considerable farmer owns, and appropriates almost exclusively for transporting his cord of manure wherever he can find it. The pine plains supplied with this manure—the steril ground that formerly produced little or nothing—yields such crops of rich garden vegetables as no one previously acquainted with them ever dreamed he should there see grow.

Among the practical operators on the land in West Cambridge, without asking of them we take the liberty to use a few names, not because others may not be their equals, but because they happen to have fallen more particularly under our observation at the time of our recent visit.

PENNSYLVANIA FARMING.

For the Farmers' Register.

In the months of August and September, I was several weeks in Pennsylvania, and passed through several counties, east of the north mountain; having no speculation in view, either in lands, or mulberries, I was studious in examining the character of the soil, and the course and method of their cultivation. The lands in all the counties I was in, are naturally fertile, with the exception of Adams; they vary, as with us, in quality, in the same neighborhoods, though they have been much equal-

ized by the hand of persevering industry. I found on soils abounding in slate stone, good corn, and excellent grass. They are untiring in improving; their principal agents are lime, and the putrescent manures, which they collect on their farms, and do not much heed the notions of chemical combinations. I was for several days at the house of a farmer, who not having a sufficient quantity of putrescent manure to cover a field he was preparing for wheat, purposed to send to the city, at the distance of eighteen miles, for bone dust to complete it. He was not one of those who having determined upon a project, accomplished it at any cost; but a plain practical man, who had advanced his fortunes by industry and economy.

I learn by a paper in the 'American Farmer,' that the late president of the Bank of the United States, has retired to the banks of the Delaware, and devotes his time and his talents to rural pursuits; that by means of a steam power and a tank, he has accomplished for himself what the philosopher of the Nile supposed he had achieved for Egypt by the power of the stars. This I suppose may be properly called elegant agriculture, and like many other elegant arts, of no great value to any but the projector; no doubt the artificial showers of Mr. Biddle, and the beautiful rainbows they produce, has excited the wonderment of many a Chestnut street lounger.

Farmers have reason to admire the magic powers of Mr. B. displayed on the banks of the Delaware. Though few of them will get a taste of the fine grapes, they all participate in a depreciated currency, which they find a wormwood dose, and most of them have a cause to regret that he abandoned "the bank parlor" for "the groves of Andalusia;" had he remained at his post, the fine vigorous institution, which sprung like a Phenix from the ashes of its parent, would never have fallen upon the desperate projects of a ruined speculator.

The rotation of crops is a matter unsettled in Maryland and Virginia, and I was desirous to ascertain the most approved in Pennsylvania, but found they had no regular system; so long as a field produces a good crop of grass, they are reluctant to break it. Formerly on the turnpikes which were established in every section of the country, a large demand for provisions for man and beast was made; wherever the rail-roads run, this is at an end. The car passengers make but one meal between Harrisburgh and Philadelphia, a distance more than one hundred miles. They fatten many cattle and sheep which are sold in the cities; but the loss of the domestic market has been sensibly felt, and will probably lead to a more extensive cultivation of grain. That rail-roads are a most beneficial improvement for travel, all must agree; and it is probable, on the great routes, will be found profitable to the companies; but it may be well doubted if they can advantageously compete with navigable rivers, navigable canals, or well constructed turnpikes, for the transportation of heavy articles. The Philadelphia and Columbia Rail-Road has been but a few years in operation, and has carried very heavy burdens, from the Susquehanna. It is now in a shattered condition, and requires heavy repairs, which must continue to recur, unless a more stable mode of construction shall be discovered.

In comparing the improved lands of Pennsylvania, with the improved lands, or such as may be improved on the Chesapeake Bay, each have their peculiar advantages. For the latter I should claim the advantages of transportation. I think where lands are equally improved, those of Pennsylvania will afford the highest product of wheat, and those on the Chesapeake Bay of Indian corn. We are a little too far to the south for the perfect maturation of wheat, and they to the north for Indian corn. They will not have this year a full crop of Indian corn, in consequence of the cool summer, which will occasion no diminution here. Our wheat, unless thrashed out early, is sometimes greatly injured by the weevil fly; they can keep theirs in the straw 'till winter without danger. By a heavy drought in mid-summer, our grass suffers most, but it springs earlier and grows later. In the marl region, we can apply calcareous manure at less cost. In Chester county, lime at the kiln costs ten cents per bushel; and to those who have the stone on their own farms, preparing it is equal to eight. Their expenses on agricultural implements greatly exceed ours; on account of the stone which pervades the country, they require to be much heavier than ours, and soon wear out; their horses cannot plough a day without shoes. A farmer who held a farm of one hundred and seventy acres, told me his blacksmith's bill exceeds annually $100. In fruit and vegetables our advantages are decided, they can grow none which do not succeed here. On the west side of the Delaware, except in very favorable situations, those who indulge in the luxury of peaches, water-melons, and sweet potatoes, get them from the city. With regard to manual labor, I could form no decided opinion. The wages there are very high; but they can call on laborers at pleasure, and discharge them when the work is done. Many of the readers of the Register can estimate the yearly cost of a large family of domestic slaves, who are treated with kindness and humanity. They have eaten out many a fair estate; and I think there was more correctness in the apothegm of the late John Randolph, "that many southern gentlemen hold their lands in trust for their negroes," than is usually admitted.

RUSTICUS.

E. S., Md., 15th Nov., 1839.

REV. D. V. MC'LEAN'S EXPERIMENTS IN SILK CULTURE.

From the Journal of the American Silk Society

[We have much pleasure in laying before the public the following paper from the Rev. D. V. McLean, of Freehold, New Jersey. It was prepared, as it purports, to be laid before the executive committee of the American Silk Society at the annual meeting, in Washington, on the 11th of December; but it was deemed advisable to publish it in anticipation of the meeting, for two conclusive reasons—first, that a printed copy of it might be put into the hands of every number of the society promptly; and, secondly, that the invaluable matter it contains might be as speedily as possible diffused over the whole country. We earnestly ask the attention of every person friendly to the cause of this valuable paper, and especially do we ask of the editors of newspapers to give it free

circulation in their columns. Those editors who are anxious to publish correct information on the subject, have a paper now that cannot fail to answer their purpose. It contains the result of *actual practice*, by a gentleman whose greatest fault, if fault it be, consists rather in under-rating than in over-estimating the profits of the business. We hope that this paper will be read by every man and woman in the United States, and that it will receive the full confidence of all—to which it is richly entitled.—Ed. Jour. S. S.]

To the Executive Committee of the American Silk Society.

During the past four years I have watched with deep interest the progress of the silk culture in our country; and actuated, I trust, by a sincere desire to awaken an interest in the community in regard to a branch of business, by which I verily believe thousands in our land might acquire an honorable and comfortable subsistence, I have labored to test both the practicability and profit of the culture of silk. Last year my experiment went no farther than the production of the cocoons—and though the results were highly encouraging, they were not fully satisfactory to my own mind.* This year I determined to go a step farther, and produce the reeled silk, ready for market. The offer of premiums by your noble society, was undoubtedly a wise measure. This will induce more accurate experiments—and experiments in different parts of our country, and under different circumstances, the result of which will enable the committee to diffuse valuable information, on which the community may rely. You will please to consider me a competitor for the premiums for the greatest quantity of merchantable raw silk produced from the quarter of an acre.

The weight of the silk in the case which accompanies this paper, is *twelve pounds*, sixteen ounces to the pound, and is the product of *one quarter* of an acre.

The soil on which my trees were grown is a heavy clay—three or four years ago, the land would not have produced 20 bushels of corn to the acre. The two previous seasons, the lot on which my experiment was made had been very moderately manured—the present season it was covered with what might be considered a good coat of marl and barn-yard manure mixed.

The 20th to the 23d of April last, I planted a half acre lot with morus multicaulis roots, cuttings, and layers. The roots were of the previous season's growth, taken from trees that did not exceed 2½ feet. The top was cut of within two inches of the root, and the roots were laid horizontally in the row, about ten inches apart. The cuttings were from the tops of these trees, with one bud to each, and were planted six inches apart in the rows. The layers were small trees, six to eighteen inches long, and were laid continuously in the row—the root of one touching the top of another. The rows were 2½ feet apart. The length of the lot, as planted in trees, is 288 feet, and the width 75 feet. I expected to have had roots sufficient to plant half of this lot, or a quarter of an acre; they planted, however, only 26 feet in width, and 288 in length. In making out my quarter of an acre, therefore, I was obliged to include eleven feet and eight inches in width from the layers; so that the dimensions of the lot was 288 feet in length, and 37 feet 8 inches in width.

I regretted that I had not roots for the whole quarter of an acre, as the roots afforded much more leaves than the layers. Owing to close planting and the nature of the soil, the trees produced were small—say an average of three and a half feet. The present growth on the quarter of an acre does not exceed 5,500, all counted, large and small.

My cocoonery is 36 by 18 feet, 2 stories high. I fed almost entirely in the second story. There are two tiers of shelves, three feet wide by twenty-four feet long—the shelves rise one above another—one foot apart, seven shelves in each tier. The second story contains 13 glass windows, with Venitian blinds. My eggs were of my own producing the previous season. They were saved with great care from my best cocoons, on muslin, the pieces of muslin rolled up in the fall, or soon after the eggs were laid, and placed in a common farm bag, and this was hung to a beam in the cellar. In March the muslins were folded up and laid one on top of another in a small tea chest lined with lead, this was placed in another of the same kind, but a little larger; and the space between the two was filled with pulverized charcoal. Then a few thicknesses of old flannel was laid loosely over the top of the smaller chest, and a loose board laid over the larger. Then the whole was set in a still larger rough box, with a loose board on the top, and this was put down in the ice house, so that the ice surrounded the sides of the box. In the inner tea chest was a thermometer—the box was examined every week, and the thermometer was not allowed to rise above 45° Fahrenheit. I am thus particular as to the mode of preserving eggs which has succeeded so well with me, because so much disappointment has been experienced in regard to eggs. Other modes equally good may doubtless be adopted for retarding the eggs; the above plan, however, succeeded with me to admiration; the last hatching the 27th of August, was as perfect as the first. This year I saved my eggs with even greater care than last, and am preserving them in the same way; and I cannot but recommend others to preserve them as above, unless they have actually tried some other mode which has proved equally good.

July 18th, I hatched some two or three thousand mammoth white. July 26, five or six thousand sulphur. July 31, two or three thousand sulphur. August 19th, over 20,000 sulphur—and August 27th, hatched the last, say 5 to 8,000, sulphur. The mammoth white worms wound in 24 to 28 days—the sulphur 28 to 33 days. A few lingered to 36 or 40 days.

Green oak bushes were used for the worms to wind in. Last year I had plasterers' lath fastened under the shelves, one and a-half inches a part. I found difficulty, however, in getting the worms to ascend well. This season I used straw at first, tied up in small bundles and set on the shelves, but this did not answer as well as I had been led to expect. At length I threw every thing aside and took the oak bushes. These have succeeded with me better than any other contrivance. They seem *natural* to the worms, and I have never seen them mount any thing so readily as green bushes.

* See the report of this experiment at page 85 vol. vii. Far. Reg.

and I see not why they may not be used in preference to any other fixtures for winding. They cost nothing, except the labor of procuring them from the woods and placing them on the shelves. The only objection I see to them is, the cocoons cannot be taken from the bushes with quite the same facility with which they may be removed from straw or some other fixtures. Yet I do not believe this will be found a matter of much moment. A little more experience, gathered from differed sections of the country will enable us to adopt the most approved plan for winding. Of the mammoth white cocoons it required an *average* of 317 to the lb., weighed just as taken from the *shelves;* of the sulphur it required 300. 288 of the largest white made one lb., and of the largest sulphur 247. The committee will perceive from this statement that the weight of my cocoons falls far below that of those produced by many other gentlemen, in different parts of our country, notices of which have appeared in the Journal of your society and elsewhere. Why this inferiority I cannot tell. The worms were fed on the shelves without hurdles, and the litter was removed from the shelves about every fourth day. Sometimes they went from one moulting to another without having the shelves cleaned. The shelves were cleaned without hurdles in the following manner. The attendant had a thin half inch board, planed smooth, 18 by 24 inches. After the worms appeared to be through their moulting, fresh leaves were given them, the attendant took up these leaves, the worms adhering, and laid them on the board which she held in her hand and thus removed them to clean shelves; if all did not attach to the first leaves, others were strewed on, and generally the second time going over all were removed. I know this mode of operations does not meet with favor among those who are for adopting the "high pressure rail road system." Nevertheless with my present experience, one year with, and another without hurdles, this is the plan I would adopt in future, at least until I am further enlightened. Many objections may be urged against hurdles. They are expensive. Hurdles to feed 1,000,000 of worms will cost several hundred dollars. This expense is by no means counterbalanced by the labor which they will save; for it admits of doubt whether, after all, there is much labor saved. The worms *will not all* ascend on the fresh hurdles, and if the policy of throwing away all that *do not ascend* readily, is adopted, probably one-half the worms will be thrown away. If this is not done, leaves must be thrown on after the hurdles are removed, and the worms must be taken off as they are without the hurdles. Another objection is the difficulty of preventing the worms from winding under the hurdles, and around them among the litter. Besides the plan of feeding without hurdles is much more simple, and on this account to be recommended to the great mass of persons who will feed. My worms were fed as often during the day as they needed it, say five or six times; they were *never* fed at night. During the whole time of feeding, the weather was very variable, the thermometer ranged from 60° to 90°, with frequent easterly storms of several days continuance; one storm lasted eight days, from August 16th to August 23d, inclusive. Several storms were accompanied with severe thunder and lightning. August 13th, a barn was struck with lightning and burnt to the ground, less than one hundred yards from the cocoonery. The worms appeared to experience no injury whatever from the thunder. The damp wet weather undoubtedly retarded them in their operations. At such times they were not so vigorous and active, but every crop was perfectly healthy; few, if any, were lost the whole season by disease. At one time my shelves were more crowded than they should have been, and worms would frequently fall to the floor. These seldom wound after they were returned to the shelves; in this way I may have lost nearly or quite the amount of one lb. of reeled silk.

In order to be prepared for cold wet weather, I fitted up a furnace in my cellar with flues leading up and around my upper room. I did not use artificial heat, however, more than a few times when the mornings were a little cool. Here I will take occasion to remark that the plan of artificial heat, and of regulating the temperature of the cocoonery by the thermometer is, I believe, entirely unnecessary. If it *is* essential, success in the silk culture is impracticable. All our writers on the subject maintain that our climate is admirably adapted to the silk worm *without* artificial heat, and I believe it is. Multitudes who we hope will make silk, never saw a thermometer, and if they are taught, that in order to make silk they must have cellars and furnaces, and flues, and thermometers, it will be in vain to attempt to get them at the business. The more simple and cheap every thing is made, connected with the production of silk the sooner will the culture be established in our country.

The whole number of worms fed on my quarter of an acre was about 40,000. The weight of leaves which they consumed was 2,576 lbs. The amount of cocoons produced was 130 lbs. weighed just as taken from the shelves without sorting or flossing. After they were sorted and flossed, there was one lb. of floss and four lbs. defective cocoons, leaving 126 lbs. of cocoons. These produced 12 lbs. of merchantable reeled silk, 16 ounces to the lb., and one lb. wastage, ends, &c. The silk was reeled on the Piedmontese reel, the water heated in kettles set in a furnace, one kettle was used as a heater, and the other to reel from.

From the above statement it will be seen that it required between 19 and 20 lbs. of leaves to make one lb. of cocoons. Of these cocoons, without flossing or sorting it required 10 lbs. and 10 ozs. to make one lb. of reeled silk. After they were flossed and sorted, it required 10 lbs. and 5ozs., or about 214 to 215 lbs. of leaves to make one lb. of reeled silk. This shows a greater amount of leaves necessary to make one lb. of cocoons, and a greater weight of cocoons necessary to make one lb. of reeled silk, than the estimates published in various quarters, and greater than experiments said to have been made actually required. All I can say is, the object of my experiment was to arrive at *facts*, and the above is a plain statement of facts as they occurred in my experience. I am free to state, that even with your very liberal premiums in view, my object was not so much to see the *very largest* amount of silk which could be obtained from the smallest quantity of leaves, or to endeavor to reach the *very maximum* which could under the most favorable circumstances be produced from the quarter of an acre, as to make what might be termed a *medium*, or *average* experiment; to feed just as I

supposed the great mass of persons engaging in the silk business would feed. I was often obliged to feed *wet* leaves, owing to the frequent long storms, and the worms appeared to experience no injury whatever from this. Still I did not consider it safe to feed leaves gathered in the storm, and dripping wet; and in our attempts to dry the leaves, some became wilted and were thrown away. The worms also were always abundantly fed, and a partial waste of leaves frequently no doubt occurred in this way. These things, together with the loss of perhaps the value of near one lb. of reeled silk, by worms falling from the shelves, would vary the result a little, and *might* show that 190 lbs. of leaves would produce one lb. of reeled silk.

I do not doubt, but that under the most favorable circumstances a few lbs. of cocoons might be produced on 10 or 12 lbs. of leaves to the lb. of cocoons. Nor do I doubt that one lb. of reeled silk may be produced from 8 lbs. of cocoons, or even less. Much depends on the quality of the cocoons, and more on the time when they are weighed, whether in a fresh and green, or entirely dry state. I could have selected from my lot, even in a fresh state, 8 lbs. of cocoons, which would, beyond all question, have produced one lb. of reeled silk—but this would be no test of the profit of the business. The public do not wish to know so much the very maximum that can be made, as what may be regarded *an ordinary standard* for every prudent farmer—and I am now perfectly, persuaded, from two years experienced that I am not greatly mistaken.

Last year I produced at the rate of 510 lbs. of cocoons to the acre—*this* year I produced at the rate of 520—and my deliberate opinion is, that more will fall below this standard than will exceed it—and in *one* case, where a less quantity of leaves will give the above quantity of silk, *two* cases will occur that will require a greater.

Most happy will I be, and greatly will it be for the interest of the community, if it shall be found on farther experience that 80 or 100 lbs. of leaves will make one lb. of reeled silk instead of 214 or 215, as required in my experiment, for my quarter of an acre did produce 2,576 lbs. of leaves, and the trees were not stripped remarkably close either—then the amount of reeled silk per acre would be the handsome yield of 104 to 128 lbs!! A result, albeit, which I frankly state, I utterly despair of seeing realized.

I have read with great regret many of the calculations of the day on the subject of silk profits—some of them, I greatly fear, are made purely to subserve *selfish* ends—regardless of the ultimate consequences to the public. Others are undoubtedly honest, but they are, I fear too often the results which are *wished*, and *desired*, rather than those which have *actually been realized*.

It is not the best way to produce conviction in the minds of men, on a subject like this, to *assume* facts, and then reason very dogmatically in regard to what *may* be done, and what the *calculator* will do *next* year, or even to take some *very fortunate* experiment made on a *very small* scale, and then infer, because *one cocoon* will weigh so many *grains*, then 1,000,000 will produce so many lbs.; or because one tree will yield one lb. of leaves the first year, and 100 lbs. of leaves will make one lb. of reeled silk—and 10,000 trees will grow on an acre—therefore, an acre will produce 100 lbs. of reeled silk the first year—or because the 120th part of an acre will produce so much—then a plantation of ten hundred and twenty acres will produce *so much*. I am pleased to see experiments made with all the accuracy imaginable, even on the smallest scale—good may result from them—but they are no safe guide for the practical man who is about to embark in a new business. I regard that experiment in this stage of the silk culture in our country, as valuable, when it is made from a lot *sufficiently large*—when this lot is in an *average* state of cultivation, and when the cocoons may be considered of an *average* quality. Then, if this shows a reasonable profit, it will accomplish more than *whole volumes of calculation*, or numberless very small experiments. The quantity of land named by the committee I regard as sufficiently small for any satisfactory results—and should they continue the liberal policy of offering premiums the following year, I would respectfully suggest whether the quantity of land from which the experiment is made, ought not to be increased.

But to recur to the matter of profit. The above shews us 48 lbs. of reeled silk, 16 oz. to the lb. as the product of an acre. If this is worth, as I understand it now is, $6 per lb. then the gross proceeds of an acre will be $288. The first year, let it be remembered. Or if it should be worth but $4.50 per lb. which is undoubtedly the safest price at which to rate it, the gross proceeds of an acre will then be $216.

In regard to the cost of production, it is confidently *asserted* by many, that it can be produced for $2 per lb. Mine cost me much more than this. My experience, however, satisfies me that it can be produced for $2.25 per lb. and I incline to the belief that it *may* be produced for $2. Produced on the farm in a small way, the cost will be next to nothing—the whole product will be clear gain. Now take the product of an acre as above stated, at $288, and allow this to be made at an expense of $2 per lb. you have a net profit of $192 per acre!! Allow the cost of production to be $2.25, and you still have a net profit of $180. Again—take the product at $216, (allowing the silk to be worth only $4.50 per lb.) and let the cost of production be $2, it gives a net profit of $120 per acre; but allow the cost of production to be $2.25 per lb.—the sum at which I know it can be made—and it still affords us a net profit of $108. This last, I am persuaded, will be found more nearly to correspond with actual results. If the price of the silk is *more* than $4.50 per lb. and the cost of production less than $2.25, so much the better for the culturist. But the above results, very nearly, are produced in another way. The amount of help necessary to attend to one acre, or to 160,000 worms, would not exceed the value of two females, 12 weeks each, and one male, the same time—indeed, I do not believe it would require so much help—but admitting it should, the maximum *average* value of this help would be *here*, $3 per week, including boarding—that is then the cost of producing 48 lbs. of silk, would be $108. And the value of that silk being as above stated $288, the net profit would be $180!! Or the value being only $4.50 per lb.; or the gross amount of $216, still the net profit would be $108 per acre—exactly the result before stated—and this, let it be observed, is just $4 more than the result shewn by my experiment of last year. I

believe, therefore, I have demonstrated, not by *figures* and on *paper* only, but by the *actual production* of the silk, that every prudent culturist may *safely* rely on realizing a net profit of *at least* $108, the first year, or $180 while the price of raw silk continues what it now is. And I ask, is not this sufficient? ought not any reasonable man to be satisfied with this? I wish, indeed, I could have made the profits a *little* larger, but I *could not do it*. Other gentlemen, in our country, with their enormously large cocoons, may have been more successful, and may have had practical results more nearly answering the calculations usually made. Suppose I had taken my 130 lbs. of cocoons, and had selected 8 lbs. of the *firmest and best*, and had reeled these, and no more, and the result had been, as I have no doubt it would, 1 lb. of reeled silk, and then had put forth my statement, saying, "if I had reeled *all*, and all had yielded as well as those actually reeled, *then* I would have had 64 lbs. per acre!"—thus increasing the profits in this convenient way more than one quarter! would not this be deceptive, and would it not be calculated to mislead? Now, however, there is no room for deception—all was actually reeled, and is exhibited to the public.

But I fear my anxiety to exhibit this whole subject before the public in its true light will induce me to write a *book*, rather than a simple statement. The committee, however, aware of the magnitude and importance of this subject, and the eagerness of the public to obtain minute and authentic information, will I trust pardon the length to which this communication extends.

Much is said in various quarters respecting the different varieties of mulberry trees as food for the silk worm. By some it is confidently asserted that the multicaulis is inferior to the broad leaved Canton, to the Broussa, and to the hundred and one other varieties for which names are invented. Others go still further, and assert that the multicaulis is inferior to all other species, the paper mulberry alone excepted, which the worm will not eat at all, and that good silk *cannot* be made from the multicaulis, that it is the least hardy of all species of the mulberry, (which, however, has never been proved,) and that the quality of the silk will always be in proportion to the hardiness of the tree from which it is made.

Now I have no theories to sustain on this subject, and I think personal interest has no influence on my opinions. I have indeed some 40.000 of these precious trees, a considerable portion of which I would dispose of on reasonable terms to any gentlemen who want the genuine article, but I think this circumstance has no influence on my judgment. Other species of the mulberry may be good, as I have no doubt they are, they may even be better than the multicaulis for any thing I know to the contrary. *One thing I do know*, the worms devour the multicaulis leaves with great avidity—grow well—continue healthy—make good silk, in sufficient quantities to yield a net profit per acre of $108 to $180. This they have done for me two years in succession. As to the quality of the silk, I do not profess to be a judge. It obtained the *gold medal*, at the fair of the American Institute in October last, and intelligent judges pronounced it superior.

Now I say other varieties of the mulberry may *make more* and *better* silk than the multicaulis. But *has* any individual actually produced more and better silk from any other tree, from a quarter of an acre? Until this is done, the public will be slow to believe that so many intelligent men are deceived, and that the multicaulis is good for nothing.

Let us judge the tree by the quantity and the quality of the silk which it produces, and at present, I have no fear that it will be snperseded by any other kind.

It is matter of great regret that men are found, professedly friendly to the silk culture who, from self-interest, pre-conceived opinions, or even partial experiments, are distracting the public mind, or rather *laboring* to distract it, respecting the kind of mulberry to be used.

The truth is, most or all the varieties in our country are undoubtedly good, and every extensive silk grower will undoubtedly be disposed to have more varieties than one on his plantation. I can however, with the utmost sincerity and confidence, *assure* the public it is my deliberate conviction, that the morus multicaulis will be the prevailing tree for silk in this country, as well because it is peculiarly adapted to the silk worm, as because great expense will be saved in gathering the leaves. The same amount of foliage can be gathered from the multicaulis, with probably *half* the expense that it can be gathered from any other variety of the mulberry.

I entertain now an unwavering conviction that the silk business will *triunphantly* succeed in our country. That it promises to do more for the comfort of the indigent and dependent portion of our community, especially for indigent females, and to add more to the wealth of the nation, than can now be told.

How much larger the profits will be the *second*, and succeeding years, if the trees are left out through the winter, as we trust they now will be, I cannot tell, as I have made no experiment on this point. Every one must see the profits will be larger. I believe it will be one-quarter to one-third greater.

What motives then, let me ask, are here furnished to embark in this business? Will not our farmers awake to their true interests? I would not persuade any farmer, if I could, to give up his whole farm to the silk business; the friends of the silk culture do not desire to see any of the present products of our soil diminished; we wish to enrich our nation by adding another to the list of her products, without affecting any that now exist. Let the farmer put a few acres of some hill-side, or unproductive part of his farm in morus multicaulis, and thus add to his income a few hundred dollars in a way in which he will scarcely perceive the cost. Let his daughters, one after another, if he has daughters, have the avails of the cocoonery in successive years, if these avails are not absolutely needed in the family. I am persuaded that by the avails of silk, produced even on a small scale, many of our farmers who are now in debt, whose farms are mortgaged to half their value, and who in consequence of this are able to do little more than live, will not only be free from debt, but will in turn have *their* money at interest; and what has been proudly said of Old Mansfield in Connecticut may be said of them. Every daughter in the family of adult years will also have her hundred or more dollars at interest, the avails of her own labor in the cocoonery.

I would *most earnestly* call upon multitudes who are engaged in no agricultural pursuits—who in consequence of the great revulsion in the times, are engaged in no regular business—many who are depending on the precarious results of speculation in its thousand forms, let these abandon the uncertainties of speculation, the excess of which has almost ruined our country, and which, if successful to them, adds nothing the wealth of the nation. Let all who are thrown out of business by the pressure of the times—all who are waiting for more propitious times in which to commence business—let *all, all* such embark immediately in the silk culture. Let them occupy lands now uncultivated and idle, and thus secure for themselves a stream of wealth, *certain* as the flow *of the tides.* A stream that will deepen and widen, on whose bosom they will be borne, safely and surely, if not rapidly to affluence and fortune.

Let fathers, whose lands in our older states are worn out, and whose enterprising sons are disposed to leave kindred and home for the far west, stock their worn out farms with morus multicaulis, and thus make it more profitable for their sons to remain at home than go to the west.

But a consideration which commends this subject to every patriot, philanthropist and christian, is the great benefits which are to flow from its general introduction to the poor and dependent portion of our community.

Even in our own happy country, there is a large class of individuals, who so far from adding any thing to the industry and wealth of the nation, are unable to support themselves for want of suitable employment. These are indigent females and children, and the long list of the aged and infirm.

The numerous labor-saving machinery, the production of the present inventive age, introduced into almost every department of life, has thrown out of profitable employment vast numbers of industrious and virtuous poor. How many worthy mothers of orphan children are constrained to ply the needle through anxious days and almost sleepless nights, to keep those children from the almshouse, while they are unable, from the want of employment suited to their tender years, to do any thing to assist their affectionate mothers? How many females and children obtain a scanty and precarious subsistence by picking berries of various sorts for a few weeks, for our city markets, who during the remainder of the year must continue in the lowest poverty or absolute want. Who *must* spend their winters in the poor-house, or live on the charity of the benevolent, and all this for the want of suitable employment. One of the most crying evils of the age is the inadequate compensation which female labor receives. This arises mainly from want of proper objects on which to bestow that labor. Indeed the secret of rendering any labor valuable, and insuring for it an adequate and equitable reward, consists in applying it to objects not only valuable in themselves, and suited to the ability of those who perform it, but which are capable of being made the means of increasing wealth. Now let philanthropy *exhaust* itself, and where can it find an object that will secure to female labor such a reward as the production of silk? Nature seems almost to have designed the production of silk for female hands. The whole work, from the feeding of the worm, to the production of the most beautiful and delicate fabric, can be performed by them, and in the whole process their labor is as valuable as the most athletic male.

Even the aged and infirm, by the aid of ingenious contrivances for moving along by the shelves, can perform almost the whole work in the cocoonery, while children gather and bring them the leaves. O! will not the blessings of multitudes ready to perish descend upon those who presevere in the midst of the most unnatural opposition in their noble efforts to establish the silk culture in our land?

In England alone, more than a quarter of a million of her people earn their bread in the manufacture alone of silk. And with a soil and climate admirably adapted to the production of the raw material, a skill and ingenuity equal to that of England or any other country on earth to manufacture it—will American patriots be content to exhaust our resources in sustaining her population—will they suffer our own labor to remain unproductive, our own poor but meritorious citizens to pine in poverty and want? How much longer shall we permit them to freight their steam packets with silken fabrics, crowd them into our market and take away in return nothing but gold and silver, and that too at a moment when the exchanges are largely against us, and when we are struggling almost to bankruptcy to equalize them? The production of silk in our country *is not now an experiment,* and considering the *vast interests* involved in its extensive production, it claims, and it has *a right* to claim the fostering care of our government in *any* and *every* way in which that care can be consistently bestowed. A brighter day is dawning upon our country. Another great staple is about to be added to her productions which will kindle joy and gladness in many a desolate heart, and pour a flood of wealth over our whole land. D. V. McLean.

Freehold, N. J. Nov. 1839.

MESSRS. CHENEY'S EXPERIMENT.

From the Silk Grower.

Having met with uncommon success in feeding silk worms this year, we are induced to give a statement of our proceeding, and the method adopted by us to hasten their labors to a successful termination. We followed, as near as circumstances would permit, the plan recommended by M. C. Beauvais, an account of which we have published, and succeeded in terminating the crop in twenty-four days, and we venture to say that firmer and larger cocoons have not been produced by any silk grower this season. The silk reels admirably, and is strong, lustrous, and of a superior quality.

June 27th, the eggs were taken from the refrigerator, where they had been kept since the 1st of March, at an average temperature of 40° Fahrenheit. They were placed upon a shelf in the cellar, where the temperature was 60°. On the 29th, at 4 P. M. they were taken to the cocoonery, the temperature at that time being 78°. All worms found upon the cloths, upon their removal from the cellar, (being but a small number) were destroyed before the cloths were placed in the cocoonery. 80,000 worms hatched on the 30th of June, which we reserved for the experiment.

Date.	Internal Temperature. 6 A.M.	12 M	6 P.M.	12 M	External Temperature. 6	12	6	12	No. of Feedings.	Lbs. wt. of leaves.	REMARKS.
June 30	78	78	77	78	70	78	70	68	18	2	
July 1	78	78	78	78	62	78	77	68	18	4	Morning cool—used heat.
2	76	78	78	78	70	77	71	9	18	8	The weather clear in the morning, and the worms lively; in the evening rain; wind South East.
3	76	77	79	76	66	76	79	67		2	Worms commenced moulting.
4	75	76	75	75	65	76	75	60	12	16	Worms finished moulting.
5	72	72	76	73	56	70	72	60	12	22	Clear—wind N. W.
6	72	75	76	73	55	72	73	65	12	30	Wind E.—brisk fires during the day.
7	73	76	78	77	60	80	70	68		2	Commenced moulting.
8	72	77	78	75	65	78	76	70	12	14	Finished moulting.
9	74	76	77	76	66	78	76	70	12	30	
10	71	79	82	79	65	80	82	72	12	80	Clear—wind S. W.
11	76	82	80	75	71	87	74	68		6	Commenced moulting.
12	72	75	74	73	65	74	72	62	9	80	Finished moulting.
13	72	75	75	75	64	78	70	67	9	130	
14	72	75	75	74	68	76	74	67	9	200	
15	72	76	75	73	67	78	72	65	9	134	
16	70	75	76	72	64	79	78	64		10	Commenced moulting in the evening.
17	74	76	75	76	69	80	78	67			Quite dormant—not fed.
18	70	78	80	77	68	84	85	72	8	140	Finished moulting early in the morning.
19	72	82	84	79	68	88	90	76	8	260	
20	76	82	82	78	76	86	82	74	8	400	
21	75	79	78	78	73	80	76	73	8	680	
22	74	82	82	79	74	88	82	79	8	920	
23	75	79	82	77	75	82	86	75	8	600	Showed signs of winding—food diminished.
24	72	79	77	73	70	86	75	73	8	200	Commenced winding.

The worms were what is generally termed the "six-weeks sulphur," and it will be seen by the above statement that they terminated their labors in twenty-four days. The amount of cocoons was 365 pounds, and it required 225 to weigh a pound. The amount of leaves fed out was 3,970 pounds, which gives 11 pounds of leaves to a pound of cocoons, and 9 pounds of cocoons being required to produce a pound of silk, it will be seen that by this system of feeding, 99 pounds of leaves only are necessary for one pound of silk.

[In a subsequent number, the editors of the 'Silk Grower' remark as follows:]

The conductors of this work have just published a 'Synoptical Table for the most speedy growth of Silk Worms,' translated from the French, in which the size of the worm is given, as it actually is, each day of its existence, and handsomely colored. The feeding was after the manner of M. C. Beauvais, with M. Darcet's process of ventilation. It will be recollected that this methed was adopby us, in a degree, and the result published in our last number, in which it was conclsively shown, by our great success, that it is the most sure and and profitable of any extant. There is but little difference between the result as given in the plate, and that obtained by us, M. C. Beauvais having produced 185 lbs. from 2,000 lbs. of leaves, and we 356 lbs. from 3970 lbs. the difference being in his favor, which, undoubtedly, is owing to the plan of ventilation (Darcet's) adopted by him, and which it was impossible for us to use at the time of our rearing. Next year we shall introduce it in our cocoonery to the full extent, and doubt not that our success will be equal to that of M. Beauvais.

We are fully satisfied that a properly regulated temperature, ventilation, cleanliness, strict attention and the frequent feeding of the worms, are all that is required to enable the American people to raise silk with a greater profit than can possibly be done by any other nation, even if we take into account the price of labor in different silk growing countries. Blessed with a proper soil, a suitable climate, and an energetic and enterprising population, America is destined to take the lead in all that appertains to the culture and manufacture of silk.

THE NATURAL AND ARTIFICIAL SYSTEMS.

[*Remarks on the two last articles.*]

From the Journal of the American Silk Society.

We are enabled in the present number to present to our readers a fair example of each of the two great modes of raising silk worms, the natural and the artificial. The first is that of the Rev. Mr. McLean, whose very lucid exposition of his experiment forms the first article in this number; and the second that of Messrs. Cheney, commencing at page 361. The first is strictly the natural system, and is the one that will be generally adopted by the people at large; the second is clearly the artificial system, which will only be followed by those who make a business of the silk culture, and who of course will endeavor to make the most of time

and capital. We beg the reader's attention to the great difference in the results of the two experiments. In the natural system, 40,000 worms consumed 2,576 pounds of leaves; in the artificial system 1,985 lbs. These worms produced 130 pounds of cocoons in the natural system, and 178 lbs. in the artificial. The cocoons weighed at the rate of 300 to the pound in the natural system, and 225 to the pound in the artificial. It required 10 lb. 5 oz of cocoons produced by the natural system to make the pound of silk; and 9 pounds of those by the artificial. The 40,000 worms fed on the natural system made 12 pounds of raw silk; the same number fed on the artificial system made 19¾ lbs. The natural system required an average of fully one week more one time to produce the cocoons than the artificial system occupied.

We have drawn these comparisons merely for the purpose of showing the difference of results produced by the two systems. We are fully persuaded the people generally will adopt the natural system; but it is proper, that they should be informed how much more they can make by careful management, than they can hope to accomplish by ordinary means. It will be seen by examining Mr. McLean's paper, that the first year the trees are planted at least, and under all circumstances, $108 can be made from an acre of ground, after paying for the hired labor of producing the silk. It also will be seen that the silk can be made ready for market, at $2.45 a pound; and that, even if sold at only $4.50 per pound, a clear profit of 100 per cent. results to the cultivator. What better business can any man pursue? G. B. S.

GREATEST KNOWN YIELD OF CORN.

From the Romney Intelligencer.

We are informed that George C. Harness, Esq., of Hardy county, raised the past season, from *one* acre of ground, *one hundred and seventy-eight bushels of corn*. Mr. H. cultivated the same with a view of premium at the approaching agricultural exibition of Hardy county, and the husking and measuring of the corn was attended to by a disinterested, intelligent, and highly respectable citizen of Moorefield. This is the most extraordinary yield, from one acre of ground, that we have ever heard of. Truly, may the South Branch Bottoms be termed the "garden spots" of the union.

GREEN CROPS FOR MANURE.

To the Editor of the Farmers' Register.

Ewing, N. J., November 5, 1839.

I am pleased with your essay on green manuring contained in the September number of the Farmers' Register. I top-dressed young clover with yard manure last spring, mowed the first crop the last week in June, ploughed in the sod in August, sowed corn the last week in August, ploughed in the corn the last week in September, sowed wheat the first week in October. The experiment will not be a fair one for various reasons, 1st, the clover was killed (with the exception of patches) by the excessive drought of last summer; 2nd, the first ploughing and corn sowing was too late, and in order to let the corn get top, the last ploughing was too late. I intended to have ploughed as soon as the clover was mown, and then sowed my corn; but the men who promised to mow for me disappointed me, and I was obliged to defer my ploughing until haying was over. If I live, I intend to try it again next season, and be in better season if possible. I sowed my oats last spring with clover; much of it has been smothered by the large crop of straw.

I have been thinking that your section of country is more favorable for this kind of experiment than this place. With you, clover might be top-dressed in the spring, mowed the last week in May, or the first in June, plough up immediately, sow corn, one and a half bushels to the acre, and about the first of August plough in the corn and sow millet, and about the middle of September plough in the millet, harrow the land, and let it remain until seed time (which I suppose to be about the middle of October with you). Here seed time is the last week in September and first in October. I propose millet on account of its being a succulent plant of quick growth, partaking much the nature of corn, and a native of a warm climate. I think the more succulent the plant, the more valuable for green manure. Winter crops should be sown on a stale furrow, *i. e.* the land should become compact or close before sowing; for summer crops, loose and mellow.

I think if this system was pursued a few years in succession, the chinch-bug and Hessian fly would not destroy our wheat. Barley is said to be a better crop to seed down with grass than oats. I commenced ploughing my corn ground for the next season on the 15th October; *did* intend to sow rye, and plough in the rye next spring, the last week in April; but it is so late I shall give it up, because the rye cannot get up enough to do much good. I am aware that none of this will avail any thing, if the land is destitute of lime, but was not aware of it until I read your 'Essay on Calcareous Manures.' I find lime eradicates sorrel.

In my opinion if we wish to improve land we must return more to it than we take from it. So long as we take more from it than we return to it, we are exhausting it, and so long as we return more to it than we take from it we are improving. A constant exhaustion will in time impoverish any soil.

It is amusing to hear farmers give their opinion on ploughing in green crops. Some say that a crop cannot benefit the land by ploughing it in, unless it first comes to perfection or maturity; others, that corn-stalks (referring to my corn) give but little manure, and that of poor quality; others say it is too expensive. The expense is the seed and sowing. Fifteen bushels of corn will sow 10 acres, and one man will sow it in one day. It reminds me of your observation in the 'Essay' where you say, "let any thing new be proposed, and every one goes to counting the expense; while, in regard to old established practices, the expense is not even thought of." One thing that is practised here is too expensive, and that is, carting out the yard manure and lying it in heaps until fall, and then misapplying it, *i. e.*, to the wrong crop, the wheat; it is a loss of labor and manure.

E. S. Hunt.

A LARGE HOG.

From the Haverhill (N. H.) Republican.

We notice in several of our exchange papers an account of a very extraordinary hog raised in Wallingford, Vt., and sold for *two hundred dollars* to a gentleman who designs to transport him over the country as a show. He weighs, it is said, *sixteen hundred pounds*, and is *three or four years old!* He is a monster indeed. We several years since saw a hog that weighed 1350 lbs. and was thought to exceed every thing in the hog line. There are, at this time in this town, several very large hogs, one owned by Mr. Timothy Rix, which is estimated to weigh eight or nine hundred pounds, and is not yet, we believe, eighteen months old. Should the creature be kept until he reaches the age of "three or four years," we doubt very much whether the Wallingford hog would have much to brag of when compared with the hog of Mr. R. Mr. S. Bliss also has a very large hog, which in the course of a year or two, could be made to go ahead of either of the others alluded to. He has a frame to build upon, and should be kept for the purpose of showing that some things can be done in this section as well as in other parts.

HOG MANURE.

From the Genesee Farmer.

For aiding the growth of many plants, and particularly corn, we have never found any manure the application of which produced such effects as that from the hog pen. Last year we had a field of corn dunged in the hill, part of it with alternate loads of hog-pen manure, and common good stable manure. Each load planted about five or six rows. From the commencement of their growth, till the ripening of the corn, the rows manured from the pig-pen had the advantage, and at harvesting they yielded a much large quantity of corn than the others, though all was excellent. A neighbor, the last spring, in planting his corn, used good stable manure, except for some few rows, for which the stable manure falling short, he substituted a load or two from his hog-pen. The difference in the size of the corn from the first, was such as to arrest the attention of every passer by, and though the year has been unfavorable for corn, it has given a handsome product compared with the other. Other instances have this year fallen under our notice, the results of which were precisely similar, and have established, in our opinion at least, the superiority of this manure over every other. Its greatest effect, however, so far as our experience or observation has extended, is produced on soils of a loamy or sandy texture, and on vegetables that require active manures to bring them forward rapidly.

It appears to us, then, an object of considerable consequence to the farmer, that he should avail himself of this resource for fertilizing his soil, as as far as possible, and that methods should be adopted by him to preserve and increase the amount at his command, as far as may be, and not allow the avails of his pig-pen to be lost to the farm, as is not unfrequently done. Where pigs are allowed a small yard to run in from the pen, they may be made to produce a large quantity of good manure, by frequent additions to the material in the yard, of straw, weeds, turfs, muck, or even good common earth, to absorb the fluid part of the manure, and preserve its salts from escaping. In this frequently renewed mass, the pigs will love to work; and if any disinclination is manifested in them to stir this compost heap, a few handfuls of corn scattered over the surface, will speedily overcome it, and set them busily at work. If the pigs cannot leave the pens, the stye should be frequently cleaned, and care should be taken that the dung so thrown out is not lost to the premises. A load of muck, or vegetable mould, occasionally mixed with, or thrown upon the heap, will, when the time for using it in the spring of the year arrives, be found, from this absorption of salts, and combination with the manure, an application of much greater value than common stable manures, for most of the crops cultivated by the farmer. Fresh manure of any kind should not be applied directly to crops of grain; as they are apt to produce too much straw and endanger the formation of a good berry. Manure should be first applied to roots, or to corn, and grain follow; by which the danger of a too rapid growth is avoided.

"DISTEMPER," OR MURRAIN AMONG CATTLE.

To the Editor of the Farmers' Register.

Lincolnton, N. C., Nov. 25, 1839.

I have noticed in your September No. of the Register the letter of W. I. Dupuy respecting the distemper in cattle, commonly called the "murrain," asking for the experience of those acquainted with the disorder, and facts connected with it from any person who may think proper to communicate. It has been my lot to have some experience with the disorder in two places in the state of North Carolina more than one hundred and fifty miles apart; and believe I understand the origin of the disorder, but am not as certain of the cause of its continuance when once introduced in any section of country, or of its ceasing. It is generally believed that the disorder is caused and spread by driving cattle in hot weather from the lower country, from the long leaf pine to the upper country; why it is so I cannot say, but will relate how it was introduced in both places. My first acquaintance with the disorder was on the waters of the Roanoke, near the Virginia line, about the middle of the state of North Carolina. The disorder was introduced by a large drove of cattle driven from the southern part of the state, and lower country, in August as well as I recollect. The drove was owned by a man of the name of Martin, and passed through Granville, intended for the Petersburg market. The disorder was left along the road where I then resided, and extended as far as I heard from the drove, and spread out on each side of the road. This I think was in the year 1794 or 95, when I was a boy. After settling to myself, the disorder got into my stock, and killed nearly half of them; but where it originated I cannot tell; it seemed to approach gradually from the lower country. It was introduced into the section of country where I now am by a gentleman moving from one of the lower counties, using oxen, eight yoke, for his teams. The number was not sufficient to spread the disorder along the road,

but wherever the mover stopped to feed, or stay a night, the disorder was produced and spread, until he reached the mountains; the nearer the mountains, the less the disorder spread, and only lasting one season, and when the mover got into the mountains, he took up camp for some time, and let his oxen range in the mountains, and in a few days they lost that property which caused other cattle to take the distemper. The oxen were worked with others raised in the mountains, without any injury to them. This change it was believed was produced by a change of food, water and air, in the mountains. From these circumstances I am satisfied that the origin of the disorder is with cattle from the lower country, driven in hot weather.

The continuance of the disorder in any country, and how communicated, is a mystery. In my first acquaintance with it, when any cattle died, they were burned up or buried, in order to prevent the spreading of the disorder; but a cow driven in hot weather from a place where the distemper has never been, and she would take it, when not a bone or any other part of those that died could be seen. And so now in this section at this time. You may remove a cow from distempered ground to distempered ground, without much danger, but not from undistempered ground. I have moved cattle from sections where the distemper has never prevailed, after hard frost has set in, and never lost but one or two, when the summer set in. But ever when I move from one distempered place to another, in warm weather, I use some preventive, by giving plenty of salt and wheat bran, or something to keep their bowels open.

As to the cure of the disorder, there are many remedies spoken of by different persons. Some use salts, glauber or Epsom, which I have known to cure in many cases if given in time. Some give calomel in large doses, and I have heard a decoction of the May-apple root spoken of as beneficial. Indeed I think any thing which will purge is good. Castor oil will not answer; I have tried it.

The best way is to use care and prevent the disorder from getting among your cattle. I had two neighbors, whose cattle ran in the old fields with their neighbors' cattle, who did not lose a single head, when their neighbors' died, and in the old fields where they fed. I asked them what they used to prevent the disorder from getting in their stock. One of them told me he did nothing but salt highly, that he constantly kept salt in the troughs in his cow-pen. The other said he used salt freely and frequently, had tar put on them, and in their troughs. It is said salting on the ground is good. Any thing which will keep the bowels of the cattle open is good; but begin in time, as the warm weather approaches. Keeping in enclosures will not prevent the disease, nor will ranging at large produce it, as I know from experience.

The gentleman who "entertains the belief that the hollow horn and the distemper are the same disorder" is entirely mistaken. The appearance of the cattle is very different, with the two disorders. I have seen cattle have the hollow horn, where the murrain distemper was never known, and cured in the way he speaks of, by boring, and putting in pepper and salt. Cattle having distemper may have hollow horn for any thing I know, but they will have hollow horn and not murrain, I well know.

Yours, &c.

A SUBSCRIBER.

P. S. Cows with hollow horn will eat well, but not thrive; but cattle with murrain will not feed, or eat any thing.

OKRA, OR ALVARADO COTTON.

From the Farmer's Gazette.

We make the following extract from an advertisement in the Columbia papers offering for sale the seed of this cotton.

"Dr. J. H. Taylor from little more than 1-4 of the stand he ought to have had, gathered upwards of 1,200 lbs. per acre. The following is an extract of a letter, from Dr. Taylor: You must observe, I had not more than 1-4 of a stand, and planted, too, at 5 feet, instead of 3; and yet I will make about 1,200 lbs. per acre. I believe it capable, on the same land, of yielding 5,000 lbs. planted at 5 feet in double rows. If I live another year I will try a hundred acres that way." Mr F. M. Gilmer of Montgomery, Alabama, from as bad a stand, gathered 1,400 lbs. to the acre. Mr. C. T. Billingslea, of Bibb Co. Alabama, from 1-4 of an acre, gathered 1,060 lbs. and expected 200 lbs. more. Mr. Aldridge, who first cultivated this cotton, it is said, raised 3,000 lbs. per acre, this year, and refused $30,000 for his crop of 30 acres. Dr. J. H. Taylor, from 22,000 lbs. of seed cotton, ginned 13 bales of 600 lbs. average; or 35 lbs. of clean, to 100 of the seed cotton. Jesse P. Taylor, well known here, weighed 425 lbs. of Petit Gulf, and the same of okra, in the seed, and ginned each; the result was 124 lbs. of ginned Petit Gulf, or 29 lbs. to the 100, and of okra 156 lbs. or 36 2-3 to each 100 lbs. of seed cotton. The staple is decidedly finer."

The price of the seed here offered for sale is $100 per bushel, $20 per gallon, and $5 per quart; which are stated to be the Alabama prices.

LIME FOR THE MOUNTAIN LANDS.

For the Farmers' Register.

I have lately made an excursion of pleasure through the Blue Ridge mountains in various directions from Aldie to Warrenton, and surely a finer country no reasonable man could wish or desire. Uplifted from the deep abysss as those mountains evidently were, when old mother earth was yet in her teens and callow feather, God only can say what is their age, but sure I am, that they are old enough for the comfort of man and beast. It is not material to agriculture whether they were blown up by subterranean fires or lifted in her callow feather by too near an approach to some rough fisted planet, which in passing, may by way of warning, exhibited some of its gravitating and whirlwind powers, and thereby lifted those "cloud capped" mountains from the lap of dear old mother earth. Fearful and unscrutable are the ways of God. It is said that lime is of no avail in those mountains; but that plaster-of-paris is as fresh and full in its operation as when first used 40 years ago; if so, age may be a substitute for lime, or it

may through vegetable medium thus far furnished lime for agricultural use. The grass of those mountains is singularly fattening to stock, and at some future day they will be devoted to stock alone.

Assuming that lime is not wanting to mountain land, it follows that the price of liming will be saved, and their stock can come to market very cheap; but from my observations upon their clover and corn, I cannot but believe that lime will greatly benefit their grain and grass. It is to be hoped that some one will make repeated and various trials of lime, that every possibility of mistake may be avoided. Much is said about a rail-road from Washington to Falmouth, and one from this to Warrenton. Should those roads be made, I have no doubt that the use of lime will re-imburse the expense four times told. All the country from the Ridge to tide water in its present condition (save that which is alluvial) is little more than a pest and curse to the owner. But give it a good dressing of lime, and I predict that it will be noted for its production and beauty. The extensive bottoms upon Bull Run, Cedar Run, Town Run, and some half dozen other streams, will, by the use of lime, become noted for their production of grass and grain. Had I the spirit and constitution of Peter the Hermit, I would go among the people of that country and hold the vengeance of heaven over them if they did not come out in every possible shape to make this rail-road. What sir! live and die in a hen-grass field, when green fields and plenty beckon them to an easy service? No, it is impossible. Let the people band together and vow that they will never give over the pursuit until the work is accomplished; let them remember that Baron Trenk made his way through a five-foot stone wall with a nail, and that every man among them is his equal. LAME.

Fairfax county.

ADDRESS TO THE AGRICULTURAL SOCIETY OF FREDERICKSBURG, BY JAMES M. GARNETT, PRESIDENT.

Another anniversary, my good friends, has once more brought us together, and I confidently trust, with a degree of zeal in our cause, rather invigorated, than depressed, by the utter failure of another effort, last winter, on the part of some of our worthy brethren in the General Assembly, to obtain legislative aid for Virginia agriculture. Could my wishes prevail, it should be the last, the very last attempt of the kind, while the law-makers of our good old state continue to be chosen by no other standard than that of party-politics, and almost to the entire exclusion of moral and statesman-like qualifications; the chief thing sought in our representatives being such India-rubber consciences, as will stretch or contract according to order from the higher powers. Legislative aid to agriculture! it is the height of folly to expect it from legislators who altho' chiefly planters and farmers themselves, appear as entirely regardless of all the great agricultural interests of our state, as if they were its most deadly enemies. Seemingly, both deaf and blind to every thing but party-politics, for many years past, session has generally been after session spent, either in wearisome and profitless discussions of mere political abstractions, or in bitter and disgraceful quarrels; alike injurious to the peace, the harmony, and the welfare of Virginia. For all this, we ourselves, are as much to blame as they are; for instead of rewarding their total neglect of us, by relieving all who are guilty of this neglect, forever hereafter, from legislative duties of every kind whatever, we actually encourage it by re-electing them. That it is in our power to rid our General Assemblies of all such worse than useless members, none, I think, can doubt, who know our numerical strength as voters; and that we have not exerted it long ago, for this purpose, has always been to me a matter not only of much surprise, but of the deepest humilation;—especially, when I reflect, that nearly every other state in the union has been so thoroughly roused to a sense of its own best interests, as to be making strenuous and well directed efforts for the advancement of husbandry in all its branches. They have been taught by the truly glorious examples of most of the governments of Europe, but particularly by the conduct of Scotland and England, how incalculably national comforts, wealth and general prosperity, may be increased by legislative aid to agriculture; and they—our wiser sister states—have profited accordingly; whilst we,—(alas! how fallen!) have been manifestly sinking in the scale of comparative power and influence,—solely, too, as I verily believe, from the causes which I have stated. These painful truths would certainly have been kept to myself, if I deemed our case a hopeless one. But having entire confidence in the power of our brethren to correct, in a great measure, the evils of which I complain, simply by the proper exercise of their elective franchise, death only shall end my efforts to rouse them from their most unaccountable and self-destructive torpor.

But enough of this for the present, and I will now proceed with my usual detail of experiments since we met last, begging you always to bear in mind, that I do it more from a sense of duty, than any great confidence in their value. But it is the best way I can think of to manifest my grateful sense of your invariable and long continued confidence—at least in the earnest sincerity of my endeavors to promote our cause—endeavors which shall never cease whilst life and health enable me to make them.

As I consider Indian corn by far the most useful of all the grains at present known to us, I will first state my several comparative trials with ten different varieties, which I procured for the purpose of ascertaining which was best; and I will begin with the Baden and Dutton—this being the second trial between them. In the latter case they were planted in contiguous rows, the Dutton 3 and the Baden 4 feet apart, each way, 2, 3 and 4 stalks to the hill, in well manured garden-ground, rich enough to produce 65 or 70 bushels to the acre of our common varieties planted at our usual distances, for such land. The result of this second trial differs so entirely from the former, as compels me to conclude, either that some mistake was made, or deception practised about the seed; although in both cases, they were distributed gratituously, and by members of Congress. If this conjecture is unfounded, the result proves that several more experiments than one or two are necessary, at least in regard to corn, if not with all other kinds of agricultural products, to decide conclusively on

the relative merits of any which we compare together. Yet a single trial often suffices with many of us, to make up our opinions *for* or *against* some particular thing, when a little more patient attention and perseverance would lead us to conclusions entirely opposite to those which we first formed. This utterly defeats the object of all agricultural experiments whatever, which is to arrive at the utmost attainable certainty in our efforts to ascertain what is best; and moreover, it is the chief cause of the endless disputes with which our agricultural papers are continually crammed, making "confusion worse confounded" about various matters which long ago, ought to have been finally settled. It is this precipitancy in jumping to conclusions, and founding theories of systems upon a few isolated facts, which, more than all other causes, prevents that constant, regular, effectual advance in all the arts of husbandry, which we might and would most surely make, if we would never fail to note without prejudice, and with the utmost practicable accuracy, every circumstance connected with all the experiments we undertake to try. In no other way can much progress be made, or great proficiency and certainty acquired, in any art or science whatever, which is dependent upon a series of experiments frequently and accurately repeated—nor is there one in the whole circle that requires them more than agriculture. He alone who pursues such a course is justly entitled to the character of a good farmer; and he deserves it too—although comparatively young in his profession, incomparably better than the man whose only claim to it rests upon his having followed the same vocation from early youth to hoary old age, without a solitary effort to ascertain whether it was susceptible of improvement or not; yet, too many foolishly suppose, that *to be old* means the same thing as *to be wise*; and of course that all aged men have much more knowledge and experience than young men can have in the same profession; although it is notoriously true, that thousands of our brethren, at the end of a long life, are nearly as ignorant as when they first began it, of all the great and fundamental principles essential to eminent success either in agriculture or any other branch of husbandry. They live and die content to know nothing beyond what their fathers taught them; and finding that they can make a little money in the old hereditary track—not an inch farther do they ever look—not a thought beyond will they ever spend, as to the possibility of doubling or quadrupling their income by adopting any, even of the best ascertained improvements, which are almost constantly making in every branch of husbandry. These being generally announced to the public *in print*, are branded by them with the stigma of "*book-farming*," and of course are treated with the most unqualified contempt.

It is true, that there may be too much credulity—too much haste in adopting new things and practices. But if we *must* choose between them, and the extremes of *stolid ignorance* and *incurable self conceit*, I have no hesitation in believing that society in general has been and ever will be much more benefited by the first than the last.

Without a strong and persevering desire to invent and discover, no great improvement ever has been, or can be, made in any art or science whatever; nor is it a good objection to this desire, that it should sometimes become so enthusiastic, as to operate against the worldly interests of those who are under its influence. For millions of mankind in all time to come, will continue to be blessed with the fruits of discoveries and inventions made by men whose whole fortunes have been spent in making them. Many of these true benefactors of our race, (and to our eternal shame be it spoken,) have been suffered to die in utter poverty, whilst thousands upon thousands of us have been enjoying in perfection all the advantages of their unrequited labors, in contented ignorance of the source from which we derived them, and perhaps ascribing, or least a part of them to ourselves; altho' probably, if the truth were told, we should be ranked in that class, which, according to the quaint saying of a highly esteemed old friend, were made for the same purpose with pewter sleeve-buttons, *merely "to fill up the assortment."* Most happily for society, we are not all pewter sleeve-button-men, or we should be in the same predicament, as to every useful invention, that father Noah's family were when they first began to till the earth after the universal deluge. It is, alas! too true, that we still have vast multitudes of drones in our social hive—drones that do much to mar the prosperity and disgrace the character of our good old mother Virginia. But thank Heaven! we still have enough working bees of the native stock, aided by occasional swarms from northern and eastern hives, to keep up such a honey-gathering as enables us "to go ahead, pretty considerably," as brother Jonathan, would say. By the way, it would be far better for us, in every respect, if we would strive to imitate brother Jonathan in his public spirit—his industry—his indomitable perseverance under every change of fortune, however discouraging, to better his condition, than to amuse ourselves with his peculiarities, and neglect to benefit by his example whenever it is good, merely for the sake of laughing at his provincialisms, and at what we are pleased to call his "*odd ways*," without reflecting, for a moment, that *our* ways are probably, quite as *odd* to *him*, as *his* can possibly be to *us*. Steam-boats and rail-roads, I confidently hope, will cure all these senseless prejudices, by the constant inter-communication which they must almost necessarily produce between all the citizens of our vastly extended community; a community, which if wisely governed, may exhibit to the whole world the greatest—the most illustrious example of what mere government can do towards producing national happiness, that the annals of history have ever recorded.

But you must pardon this disgression, and I will proceed with the statement of my experiments. The first, as I heretofore remarked, was with the Dutton and Baden corn. Both were planted on the 9th of April, and received precisely the same culture, which was altogether with the hand-hoe—the spot of ground being too small to introduce a plough. But it was well worked four times. The Dutton began to tassel about the 28th of June, the Baden at the end of the following week; although the difference, in this respect, between the two kinds which I received last year under the same names and from the same source, was quite three weeks. A still more striking difference was, that the Dutton of last year, was literally a dwarf-corn in every respect—lower than the Baden by three or four feet, and producing much smaller, although more

numerous ears; whilst the latter was, in the first trial, and has been in the second, the tallest corn I ever saw—shooting much higher in both trials, than any of our common varieties, and having smaller ears. The Dutton corn, of the present year, has grown as tall as any kind except the Baden, which it fully equals in the size and number of its ears, although neither has any thing to recommend it in this respect. In this trial I have noticed two things which have struck me with much surprise. One is, that the Dutton corn, although the earliest, has been considerably changed by the Baden; for it has many white grains intermixed with the yellow, whereas the latter has no yellow grains mixed with the white. But a still more remarkable fact is, the proof exhibited by one ear of the Dutton, that the change in the color of the grain commences in the outer end of each instead of the small end next the cob, with which the silk directly communicates. This circumstance in the physiology of the corn plant is, to me, altogether unaccountable and I should be much gratified at seeing some rational explanation of it. What I have further to say of the two varieties just mentioned is, that my two trials of them induce me to conclude that neither will suit our climate and latitude. Great as the difference has been in the results of these trials, both have fallen immeasurably short of the characters which some of our newspapers have given of the two varieties. But it is possible that I might not have obtained the genuine kind in either case; for such is the unprincipled cupidity of a vast proportion of seed and plant sellers, that the moment they discover the slightest indication of an opportunity to make a profitable humbug of any thing in their line, they leave no art, however knavish, untried to effect their purpose, even to the substituting of one kind of seed or plant for another, wherever they can do it without the risk of detection and exposure. The most barefaced thing of the kind that I ever knew, occurred last spring or winter. One of these humbuging gentry, not content with the popular title of "Baden corn," in advertising some which he wished to sell, called it "*the true twin Baden or tree corn*," although he must have known perfectly well, that two of these titles belonged to other and distinct varieties. This most shameful and truly dishonest practice not only greatly discourages us from making experiments, either with corn or any thing else, but often defeats entirely our object in making them, which is to ascertain the best and most profitable crops to cultivate. For this evil there is but one cure, and *that is*, to save our own seed whenever we can, and when we cannot, to buy only of seedsmen whose characters are irreproachable.

My second corn-experiment was with the mixed seed of the four following varieties, to wit:—twin-corn, Carmichael's improved do.—Alsop's and Baden's—all of them white, and somewhat resembling each other in character. The only visible effect was an increase in the size of the ears but not, so far as I could judge, in the product per acre. And here I beg leave to express an opinion founded on my own experience, corrobated by that of all the best corn-planters with whom I have conversed on the subject. It is, that the larger the ears of corn are, the fewer there will be on a stalk, and the less will be the proportion of grain to the quantity of cobs, and the size of the stalks, compared with the smaller eared varieties, which, in all the instances that I have noticed, have ripened sooner, had more ears, with much less cob to the grain upon each, and consequently have produced more per acre, and shelled out more to the granary in which they were housed. To these facts there has been no exception in five trials, as accurate and fair as I could possibly make them, between five distinct varieties of large eared corn, three of which trials were made this year, and the twin-corn which I first obtained from Governor Lloyd, of Maryland, but have greatly improved since, by careful selection. The latter has, in every case, produced many more ears, more grain, and weighed more per bushel than all the other varieties but one, which was a large-eared corn called Richardson's, the seed of which I procured from Spottsylvania. This it exceeded in measure, and equalled in weight. Even in the best land, whereon I have tried the large kinds, they have rarely had more than one ear on a stalk, whereas the twin-corn in similar soils, has very seldom had less than three, and not unfrequently from four to six, sometimes even seven or eight, although these of course were small. In my crop of the present year, which is chiefly of twin-corn, I have noticed a growth of so extraordinary a kind, that I should have some hesitation in mentioning it, if I had not exhibited a proof of it to you, at our last anniversary. I have found several stalks with two distinct ears growing on a foot-stalk or branch from one joint; two I found with three ears, and one with four, all separate, and on the same branch from a single joint. The last has three other ears growing on foot-stalks or branches from other joints. This circumstance I have mentioned to many old corn planters, but have not met with one who had ever seen or heard of any thing of the kind. I myself deem it so remarkable, that I shall send the best specimen to that very good friend of our cause, Mr. Ellsworth, the Commissioner of Patents, who is making a collection of every thing rare and excellent which can contribute in any way to promote the agriculture of the United States. I avail myself of this occasion to announce his object, which is truly patriotic, that all who sincerely love their country may zealously aid him in attaining it.

To you, my brethern, who know me so well, no disclaimer of selfish motives, I trust, will be necessary in regard to any thing I have said in favor of the twin-corn. But many to whom I am an utter stranger, may probably read it, and possibly may rank *me* among those contemptible wretches, now so common, who are ever seeking to make a profitable humbug of any thing, however worthless, if they have the faintest hope of exciting credulity enough in the public to effect their purpose. They are true swindlers in spirit, if not in fact, and have lately become so numerous and successful, that I could not blame entire strangers for suspecting me of wishing to play the same game with a grain which I have so highly commended. I therefore deem it necessary, should there be any such persons, to assure them that I have not the slightest desire nor design to offer *my* twin-corn for more than my neighbors ask for theirs, neither do I wish to sell it in small parcels, which is always very troublesome.

But there is *another error* in regard to myself, against which it may perhaps be well to guard even *you*, my old and intimate associates. It is

the suspicion that I may have made a *hobby* of this corn. Should any of you entertain it, I confidently trust that it will instantly vanish, when I call your attention to the fact, which I have already stated, that during the present year I have made a fair comparative trial with no less than nine others varieties of corn; and that I feel pledged to continue similar trials as long as I can procure different kinds of corn wherewith to make them, my sole object being to ascertain the best in every respect, that our country produces. I have already ascertained, and as I verily believe beyond the possibility of having been deceived, that the twin-corn is more productive by at least 15 per cent., than any other with which I have tried it; and such a difference, even in a single crop, is well worth regarding, to say nothing of an equal annual difference during a man's whole life. Now, if this has been the result, as it certainly has, of the careful selection of seed corn, for a series of years, (a practice first published by a Mr. Joseph Cooper of N. Jersey,) may we not well hope to make still greater improvements in the quality and productiveness of this prince of all grains, by pursuing the same means, and continuing to make comparative trials between all the most popular varieties we can procure? Although there must be a limit to the improvement of all plants, I think it almost certain that none of us have yet reached it in regard to any that we cultivate; and this should stimulate us to unceasing efforts for the attainment of an object so highly important and desirable.

There are two of my corn experiments which I have yet to mention—both with dwarf varieties—neither of which have I compared, either with the twin corn, or any other kind. One I received under the name of the Long Island yellow, flat corn; but was prevented from measuring either the ground or quantity of grain, by its being gathered without my knowing it in time. All therefore I can do, is to report upon it by inspection. It has longer cobs than any corn I ever saw, being generally from 10 to 12 inches in length—one I found that measured fully 14. It has 8 or 10 rows on the cob, of broad grain, of a rich orange color, which is fit to grind early in August, and which, one of my brothers from whom I obtained it, informs me weighs 61 to the bushel. Even in our climate, I think it would be productive, as it grows so low, that, in rich land, it might be planted 3 feet each way, with 2 and 3 or 4 stalks in a hill. This might be well worth considering by those bad providers who sell out their corn before Christmas, and buy before midsummer, if they had any rich land in which to plant an early variety; but most unfortunately for them, they are rich only in bad habits, which starve the stomach, at the same time that they exhaust the purse, and thus burn their candle at both ends.

My last corn experiment was with the kind designated by the captivating title of the "Chinese tree-corn!" which has been rendered notorious throughout the United States, by the Munchausen puffs of a certain benevolent gentleman who professed to sell it for "*charitable purposes*," at the very moderate price of 25 cents a ear! Now, notwithstanding there is strong reason to suspect that *his* charity, like that of many other professors, has ended where it began—at home; and notwithstanding *his* corn has fallen so wofully short of the character which he gave it, I must say, that *my* trial of it illustrates as completely as any thing I have ever known, the truth of the old saying, that "*the devil is not as black as he is painted.*" Of this I offer the following statement as a satisfactory proof. I myself selected an ear of this famous corn, last winter, in Thorburn's store in New York, out of a barrel just opened, and received afterwards as a present, half an ear, also bought from the same store by a highly respectable merchant of that city. I planted the grains of both on the 7th of April, in high land, such as I believe would produce 5, and possibly 6 barrels of our common varieties of corn, planted at the usual distances. Two rows were planted 3 feet apart each way, leaving 2 and 3 stalks in a hill—in a few instances 4. The third row, by mistake, was made 5 feet from the others, but left with the same number of stalks the narrow way. The whole ground was worked once with the plough, twice with the cultivator, and twice with the hand-hoe. The grain was fit to grind early in August, but the stalks including the tassels, measured only about six feet in height, and the whole appearance was so unpromising, that I probably should have given all of it to the hogs, had I not planted it specially for an experiment with which I was determined to go through, as I make it a constant practice to do with every thing of the kind. I therefore let it remain without pulling the blades or cutting the tops, until the middle of October, when it was carefully gathered in my own presence, having previously had the ground accurately measured with a surveying tape. This turned out to be within 40 square yards of the 16th of an acre; and to my great surprise, produced two bushels of sound corn, weighing 58 lbs. to the bushel, which is at the rate nearly of 6 barrels 2 bushels per acre. Had the mistake not been made in planting the third row, 5 feet from the other two, the 24th of an acre, within a small fraction, instead of the 16th, would have produced the quantity I gathered, for it was evident that the greater distance did not make the third row better than the other two. Sixteen selected ears averaged in length $9\frac{1}{4}$ inches, and in rows upon the cob, twelve. One of my neighbors, who is an old and experienced corn planter, tried this corn in his garden, and pronounces it the best for table-use he has ever cultivated, being a very early bearer, and more productive than any of the other dwarf varieties he had seen.

What is both curious and instructive in regard to this corn, is, that although our papers abound with unqualified abuse of it, and its charitable puffer, who certainly deserved some public exposure, not a single individual among the numerous denouncers of himself and his "humbug corn" as one calls it, has deemed it worth his while to report any measurement whatever, either of the ground on which he planted it, or of the quantity it produced; although we ought to presume, that each of them bought it for the express purpose of giving it a fair trial. But if all experiments are to be thus made, I will venture to say, that our cause will derive precious little benefit from them.

Let experimenters always finish carefully, whatever they begin, and our agriculture will continually improve. But it is, to say the least of it, a great waste of time, labor and words, to be writing and publishing such articles as most of those which

we have lately seen on this subject: for they contain nothing but mere opinions, evidently written in bad temper, and apparently more for the purpose of letting off the peccant humors of the authors, through the press, (which they have thus used as a kind of safety-valve,) than to furnish any matter really useful to the agricultural community. For any thing that I have yet read, they have tried this unlucky corn by no other taste than its *ill looks*, which is but a very fallacious guide in most things and hence it is that I have commented so freely on the course which they all appear to have pursued—a course, which if generally followed, would render it perfectly useless to make any agricultural experiments whatever.

This year, I have made my first experiment with broom-corn. It was planted 3 feet by 4, and from 3 to 6 stalks left in a hill, on land of ordinary quality. It produced from a part of the ground which I measured, at the rate of 70 or 80 bushels of unclean seed; but having no convenient means of seperating it from the husk, I could not tell how much that quantity would net. The ground received the same culture with the Chinese tree-corn; and this trial has induced me to think, that the grain would be preferable to oats for feeding any kind of stock. The northern farmers who are well acquainted with it, and have ascertained its value by actual experiments, say, that it is worth a third more than oats, and will bring more to the acre. In addition to this, I know that the broom-makers give, at present, $5 a hundred for the brush, stripped of the seed, from which they have contrived an excellent implement, that may be made for two or three dollars, and the stalks yield a considerable quantity of good fodder, although less than our Indian corn. These extra values over oats, (which are not mere matters of opinion but of fact,) are surely much more than sufficient to pay the extra expense of its culture.—Some writer has lately objected to cultivating it, that he thinks it "a great exhauster."—But his opinion seems to me no better than the reason he assigns for it, which is, that "*the seed are oleaginous.*" For even admitting both to be true, the objection applies quite as strongly to Indian corn itself, which is also *oleaginous*; and with still greater force to flax, cotton, the castor-bean, pumpkins and squashes, the seed of all which plants produce a far greater quantity of oil in proportion than broom-corn seed.

My experiment with turnips of several varieties, (drilled at different distances,) but chiefly ruta baga, of which I think as highly as any person who has expressed any opinion on the subject, has led me to a conclusion which I now offer for what it is worth. It is, that the practice with many persons, of making the rows $2\frac{1}{2}$ or 3 feet apart, and sowing the seed on the top of ridges formed over trenches filled with manure, is highly objectionable for several reasons. The first is, that between 3 feet and 2 (which appears to me quite enough,) we lose $\frac{1}{3}$ in the number of roots, without any thing near the proportionate gain in the size of the last number. This is confirmed by the fact, that the greatest crops ever recorded in our papers have been made from grounds where the distances were less than 3 feet, the wide way. But, even admitting that the gain in size at the latter distance will make up for the loss in number, there is another argument in favor of 2 feet drills or less, which must be conclusive, if those root culturists are right, who assert, that the nutritive matter in all turnips and beets also, *does not increase* in proportion to their bulk. For the the truth of this assertion, I cannot vouch from my own experience; but it is sufficiently important to be well worth investigation. My second objection to the widest distance is, that straight drills, 2 feet apart, may be worked with a suitable plough or cultivator, (of which we have many,) quite as easily, as drills 3 feet apart; but the single coulter, followed by the hand-hoes, I prefer to either plough or cultivator. My third objection applies to ridges and trench-manuring; and it is this: Since our climate has become so liable to excessive drought, all roots, cultivated on high land appear, manifestly, to thrive best on a level surface, such especially, as grow much above ground, which is the case with the mangle wurtsel, the sugar-beet, and the tankard turnip. And, lastly, the manure deposited in trenches, (which operation nearly, or quite doubles the labor of distribution,) benefits the crop only until the fibrous roots of the plants protrude themselves beyond it, as all of them soon do. Even before this takes place, the manure in trenches does not act with near as much power, as when the same quantity, on the same space, is spread broadcast, for the former frequently remains unrotted, and even fire-fanged, when the roots are dug, as I have often witnessed in digging Irish potatoes.

One of my turnip experiments was, to ascertain which acted best of the following kinds of manure—marl, having about 37 per cent of carbonate of lime—undrawn but old ashes—bone dust—fresh cotton seed, mixed with pulverized mortar that had grown hard, although recently prepared—bone dust again—old plaster pulverized—and fresh stable manure mixed half and half with the sweepings around my stable. These were regularly spread in the order in which they are mentioned, in equal quantities as well as I could judge by the eye, and on equal spaces by measure as to length and breadth. Across these spaces I drilled in rows 15 inches apart, seed of the globe or Norfolk white turnip—the yellow Scotch, called the Aberdeen—the ruta baga, and Dale's hybrid turnip, which is also yellow. The seed of the last was at least 5 years old, but came up as well as the rest. Each kind of turnip appeared to be equally benefited by the same kind of manure; but there was an obvious superiority in the growth of all upon the spaces where the bone dust and the cotton-seed, with pulverized mortar, had been applied—between the effects of which two manures I could see no difference. The plants on the marl and ashes spaces were the next best; but slightly better on the latter. The old pulverized plaster, and the fresh horse manure, mixed as above stated, evidently produced less benefit than the other manures. There might possibly have been some little difference in the strength of different parts of the ground on which the experiment was tried; but I perceived none, and the spot being only ten or eleven yards square, my eyes could not have deceived me much. This I mention to show the necessity of the utmost possible accuracy in all agricultural experiments that can be of any real value. Unless thus made, their publication often leads inexperienced farmers into injurious practices, causing the loss both of time and

labor, which is virtually a loss of money also.

Before I quit the subject of drill culture, it, may perhaps be useful to some of my brethren briefly to state my own process, as I have found it a very great saving of labor. In making the drills for the seed, I use a marking rake, in which four pegs, an inch square, with sharpened ends, are fixed at the distance from each other, I prefer for the particular kind of seed to be sown. The same rake may serve for two different distances, by having a row of pegs in opposite sides of the timber which holds them. It has two handles whose ends are connected by a cross piece, and by this the sower pulls it backwards, marking in the first instance, four small furrows at once, in which he is guided by a stretched cord that he suffers just to touch the outside peg all the way as he walks. After this, each time of passing the outside furrows serves instead of the rope to keep the furrows straight, but then he marks only three at once. The rake should be heavy enough to make the furrows about an inch deep. In these the seed are dropped from a very simple hand drill, which may be made for three or four dollars, although it will last for a man's lifetime, and is so contrived as to sow seed of any size or shape that will pass readily through a hole; and to perform at the same time, the three different operations of opening the furrow, dropping the seed and covering them. With this drill and marking rake, one man can easily finish the whole work of sowing an acre in a very few hours, and with far greater regularity than can be done in any of the common methods.

In an experiment made with the Rohan potato, the 63rd part of an acre produced seven bushels and three pecks, which was at the rate of 488 bushels per acre. The quantity certainly would have been greater, as the seed would have planted more ground; but fearing a loss by cutting them into pieces having only one eye, many were planted having two or three eyes to each. Even this product, however, far exceeds any yet made in our part of country, from any other variety of this valuable root, and must give Rohan potatoes a decided preference—at least for a quantity, over all the kinds at present known to us. But we may possibly obtain a still more productive variety, since it is now well known, that by planting the apples, entirely new and unknown kinds will continually be produced. I ought to mention that my Rohans were planted 15 inches apart each way, in a level surface, well manured broad cast, and then dug. Twelve of the largest together weighed twelve pounds, and one of these a pound and a half. covered with straw 5 or 6 inches deep; in which state they remained untouched until they were dug. This mode of planting saves all the labor of cultivation, and improves by the straw instead of impoverishing the land.

Here ends my detail of experiments with which I have detained you so much longer than I wished or expected, that I almost fear to proceed, as I heretofore have done, at our anniversaries, to offer you a few concluding remarks by way of caution against prevalent erroneous opinions and practices, and of encouragement to perseverance in all the means best calculated to promote our cause. But since my age admonishes me that it is very possible I may now be addressing you for the last time, this consideration I trust will excuse my proceeding for a few minutes longer.

Among the circumstances which should increase our zeal and animate our hopes in abiding by old Virginia forever, is an abatement in many parts of the state, of the mania, (as I always considered it,) for abandoning our native homes, and all that can endear them to us, in search of new, unknown, untried lands, where, in a vast multitude of cases, the design first avowed by most emigrants, of making money for the *sake of their families* is very soon converted into the settled, ever anxious, heart-corroding passion for making it solely for its own sake, to the neglect of almost all the conveniences, comforts, and enjoyments of civilized life. What has produced this abatement of the migrating mania, which to me seems evident, I cannot tell, unless it be, that the newly awakened spirit for agricultural improvement has already so far and happily operated upon most of us, as thoroughly to have convinced us, that even our most exhausted lands are, in general, capable of soon being rendered very productive; and probably at less expense than we should necessarily incur to move to a new country; to erect the indispensable buildings to clear lands for cultivation; and then have to wait some years before we could make any other income, than "hog and hominy." In proof of the great capacity of almost all our lands for speedy improvement, I will here state what has resulted from a small trial of my own soil, although it never was of the first quality. The fields have been cultivated ever since I could first remember, which is more than half a century, in three-shifts, one of which has been annually pastured during the whole time, except for a short period that I followed the inclosing system of my good old friend Col. John Taylor, of Caroline, whom I have always considered as the father of Virginia agriculture, and whose memory will be honored and cherished as long as a single friend to our cause is left in the state, who either knew him personally or by character. But to proceed with my statement; the field in corn this year had a few acres cow-penned last year, and not ploughed up until the past spring, a practice, by the way, which is the result of many trials made by myself and others, that have most thoroughly convinced me of its superiority to ploughing up each pen as soon as it is removed. The corn on these acres was planted in April, the hills five feet by three apart, with one and sometimes two stalks left standing in each. One of these acres which appeared somewhat better than the rest, produced, by accurate measurement, eleven barrels of sound corn. Another acre, (both of twin-corn,) in a different part of the field that had been an old clover lot, but cultivated, with only one or two sprinklings of manure, for several years past in corn, wheat or oats, was also accurately measured, and produced fifteen barrels, within a fraction of a bushel, and this quantity be it remembered, is worth double or triple as much here, as the same would be in most of the new states. Only a short period has elapsed since you could visit scarcely a family of your acquaintance without finding them in distress, at recently parting with some intimate friend, or near and dear connexion, hurrying away to far distant lands. Now, comparatively speaking, it has become a rare sight; nay, I know several instances of individuals and whole families having returned from this voluntary banishment, to their former neighborhoods, determined never to quit them

again. If they have been long absent, they find, on coming back, a new condition of things, in many parts of their beloved old state. Improved modes of culture, and zealous, active efforts, in various ways, to restore the fertility of our soils, are causing our much abused and neglected fields, once more to "smile and blossom," as in the olden time; whilst the class of planters and farmers is fast rising, in public estimation, to that rank in society to which the pre-eminent importance of their profession to our national prosperity and happiness so justly entitles them. They themselves evidently begin to feel it, and consequently to cherish a laudable pride in their own improvement in agriculture—not only as an art, but a science also; for there are hundreds of books and papers on the subject, now read and studied, for one that was even looked at, a few years ago; so that the few individuals who, in these times, are silly enough to expose their own ignorance and self-conceit by declaiming against what they call "book-farming," are fast becoming objects both of pity and contempt. These, my good friends, are *all* circumstances truly well calculated to encourage every man among us, who is a real friend to his own native state, never to weary in his efforts for her welfare and happiness, as long as there is a single shot in the locker. But they are especially encouraging to the whole body of our yeomanry, by the proof they afford, that the abandonment of our homes, kindred, and friends is far—very far from being at all necessary to secure every enjoyment that a rational man ought to desire in the present life.

So far for our encouragements to live in and die by old Virginia. But now come the cautions and warnings to which I beg leave to call your attention; for unless *they* are duly regarded, none of these encouragements can be rendered available to any great extent. First then, beware of adopting the conceit, which is so common, that we already know enough of any branch of our profession to supersede the necessity of striving to know more; for it certainly produces the practice, (if standing still can be so called,) of stopping short in all efforts at improvement; whereas, there is no calculating the extent to which this may be carried, if we would only act with the same common sense that we do in regard to the preservation of life. *This* we anxiously endeavor to prolong, as well as to increase the means of enjoying it, notwithstanding we are perfectly certain that all must die, although we know not when. Why, therefore, should we not also strive to increase the means of improving our profession as one of the chief sources of our pleasures, since every one believes this *may* be done, although all are equally ignorant of the extent to which these means may be carried; and none can tell but that there is a point of improvement far beyond any thing ever yet attained, even by the most skilful and best informed agriculturists of the world? Would we constantly act under a thorough conviction of this fact, our husbandry would soon reach a degree of perfection which the most sanguine amongst us have hardly ever yet formed, even a faint conception.

Another caution which seems every day, to become more and more necessary, is, to guard ourselves most anxiously, against that inordinate passion for the rapid accumulation of wealth, which tempts us to rush headlong into new modes for acquiring it—modes of which we are utterly ignorant although we often suffer ourselves to be seduced into them by humbugs—so excessively extravagant, that we could not fail to see them in their true light, if the baneful lust of wealth did not make us stone-blind to their absurdity. I would here quote that wisest of men, king Solomon, against those who "*hasten to be rich*;" but it seems hardly worth while; for as most of his admirable lessons of wisdom have generally been disregarded, for more than two thousand years, it is hardly probable that *we*, of the present day, should obey them any better, than the millions upon millions who have lived and died before us. But there is *one* argument, I think, in support of my caution, that comes home to the selfishness of us all, and is so plain that he who runs may read it. Let us ask ourselves what proportion of our brethren has ever become rapidly very rich by cultivating the soil in any thing whatever? Is it one in a thousand, or one in ten thousand? If not, ought any man in his sober senses, to venture in a lottery where the blanks to a prize are ten thousand to one? Common prudence and common sense would, at once, answer no—never. The worst of it is, that as high seasoned viands and strong liquors, if long used, create in our *stomachs* a distaste for plain, wholesome food; so these enormous profits, although only in expectancy, by an almost countless majority, excite in *their minds* a similar distaste for the comparatively slower, but far surer profits of our ordinary husbandry; although *this*, if judiciously and industriously pursued, will, more certainly procure us all the conveniences, comforts, and rational enjoyments of life, than any other employment that we can possibly pursue. Even in ages long past, when husbandry was, almost, in its infancy, one of the best and most celebrated of the Roman poets—in his enthusiastic admiration of our profession, exclaimed—

"Oh! fortunati nimium, si sua bona norint!"
—Oh! too fortunate, if they were only conscious of their own good!"

The incontestible proof that *this* is generally deemed the best of all professions, is, that all men, (with very few exceptions,) strive to become, ultimately, owners and cultivators of the soil. *This* was man's first occupation, and seems to be destined by God himself, to be estimated, throughout all ages, as the chief source for supplying his wants—augmenting all his innocent pleasures, and ministering to his happiness, so far as the things of time and sense can contribute to promote it.

I could here give a most edifying history of the latest of our humbugs. But too many of our shoulders have been recently wrung by it, and the galled places are still smarting too much, for the recital now to do any good, I therefore forbear, for the present; but will certainly give it, (if alive,) upon the earliest threatenings of a similar visitation.

The last of my warnings and cautions which, above all others, I would most earnestly press upon your attention, is against a moral disease of such universal prevalence, that it affects every class in society, but ours, I think, most injuriously; for I consider it the chief cause of the numerous emigrations heretofore made by our brethren to the new states and territories. In a word, it is the disease of *extravagance*—of *expenditure beyond income*. It may perhaps, appear both foolish and

presumptuous in any single individual to offer even one word of admonition in regard to any moral disease whatever, which is so widely spread as nearly to destroy all hope, either of mitigation or cure. But the less the hope, provided there be any left at all, the greater seems the necessity, and the more imperative the duty of exerting ourselves for its removal. I must beg leave, therefore, to offer *my pittance* of advice and prescription in a case of such vital importance to us all.

Having ascribed the numerous desertions of our lands by their former proprietors, chiefly to our increased, and still increasing extravagance, permit me now, concisely to offer the proofs. None, I think, can truly deny, that the whole cultivated lands of Virginia produce more income than they formerly did; either because more surface is under tillage, or its culture better, or the efforts have been greater and more successful to improve it. Why then the supposed necessity for emigration? Simply because our expenditures in household and personal expenses, in dress, furniture, equipage, but above all, in our vagaries over the face of the earth and the waters in steamboats and rail-roads, without any apparent object, (unless to be idle, and to escape from our domestic duties,) have increased *geometrically*, while our landed income has augmented only in an *arithmetical ratio*. In other words, we agriculturists in general, now spend dollars where we formerly spent cents. Add to all this, our boys, poor fellows! are not unfrequently left, nay often encouraged, to spend their time and large portions of the family income, in assiduous efforts to spoil God's own image by preposterous and deforming fashions, and in playing the man, while yet mere children; instead of being trained to aid their fathers in all their farming operations. Our girls, God help them! are no better managed, in cases innumerable; for multitudes of them are taught, long before they are out of their teens, to ape all the airs of fashionable women, to electioneer for husbands, in any way that promises success, at all places of fashionable resort, often on borrowed funds, for which their fathers' lands have ultimately to pay; whilst they should be assiduously seeking physical and intellectual improvement at home, and taking lessons from their mothers in that most essential and comprehensive art called "*house-keeping*," without a competent knowledge of which no woman is fit to become the mistress of a family. All this utter waste of time, of landed revenue, of the intellectual and bodily labor that might be applied to augment it; all this abuse of God's best gifts goes on amongst hosts of our brethren, in a vast multitude of cases, apparently without any looking either forward or backward. The farming profits having long vanished, give place to dealings upon "credit," until the sheriff calls for taxes; or the convenient, accommodating retailer of goods, comes down upon them for *some small matter, a few dollars only, if not convenient to pay the whole account;* the annual, but very unnecessary tribute paid to northern importers, for goods which our Virginia merchants could just as well import for us, if the want of foresight in themselves, and misgovernment in our rulers, had not prevented it. *Then it is*, that the paroxysms of the emigrating fever seize us; *then, it is*, that, you hear the cry: Oh! we can't live here any longer, we must move to a new country; our lands are worn out past recovery, they will not furnish salt to our bread! and away they scamper, in thousands of instances, without having ever seen, or possessing the slightest knowledge either of the country to which they are going, or the character of its population, abandoning forever, their native homes—although in reality, they require nothing under heaven, but a few years of industry and economy, to yield them every convenience, comfort, and enjoyment, that rational men ought to desire.

Having exposed to you, as forcibly as I can, the errors and the evils which vitally concern our prosperity as a class, perhaps you will expect me to suggest a remedy, if any can be found. I assert that it must originate *with*, and be applied *by* the masters of families, for *they* generally may be considered the heads of the same, although the exceptions are numerous, *wherein*, according to the vulgar saying, "*the grey mare is the better horse.*" This is generally spoken in bad sense, indicative of a devilish temper and untameable tongue in the mistress, and a chicken's heart, and dastardly spirit in the master; yet to the shame of our sex be it said, the expression is too often true in a good sense, for every one has seen many instances where the whole burden of family affairs has devolved on the poor wife, from the utter worthlessness of her husband, and where *she alone* has proved the main stay that preserved all from irretrievable ruin. Many, very many of these cases are as pitiable as they are real, and cry most loudly, for that reform, which, as I before said, should commence with the masters of families. Let *them then*, only begin, for if they are idle and wasteful, they have no right whatever to expect or require any thing better of the mistresses. Let the masters then, only take their proper station, and act in it constantly as they should do, and most sincerely do I believe, not only that all these worthy and excellent women of whom I have last spoken, would gladly confine their labors within their own proper sphere of action, but that they would be able to incite multitudes of their own sex to follow their highly laudable example. For, thank heaven! we still have left enough of the descendants of the genuine old stock of Virginia wives, in every class of our society, thus to honor the memory of their mothers and grandmothers; and to hand down unimpared, untarnished, all those domestic virtues which adorned their characters and rendered them inestimable blessings to their families. Those virtues all still live as perfectly fresh in my memory, as if the admirable possessors of them whom I can first remember, yet lived among us, and God grant that they may never, never be forgotten by any of their posterity.

Could the reform I have spoken of once begin with the masters of the household, not even a shadow of doubt, I think, could exist but that a vast majority of them, instead of having their wives to aid them in wasting their common funds, would find them always ready and most willing to co-operate, with heart and hand, in every act of useful retrenchment, of domestic economy and good management, which promised to promote the comforts, the enjoyments, and the happiness of their homes. *Then*, my good friends, but a few years would pass away, before we should witness peace, plenty and joy in numerous families where we now behold little else than painful struggles against poverty, and vain, cowardly ef-

forts to keep up a show to the last, until the final severance from friends, country and kindred is forced upon them by their own most culpable improvidence. Then, ere long, we should contemplate with deep and delightful emotion, the old dwellings of our long buried ancestors, rapidly repairing, instead of tumbling into shapeless ruins; or their bricks and stones, like some that once were parts of our venerable churches, converted to the meanest purposes. *Then*, would our love of country soon receive a new impulse; a vivid encouragement from beholding our long worn out barren wastes converted into fertile fields, teeming with luxuriant crops; and to cap the climax of well-earned, perfectly justifiable pleasure, we who have resolved to live *in* and die *by* our mother state, might continually exult in reflecting that *all this* has been *our work*. In a word we should soon behold so happy a change wrought over the face of the whole country, as well as in its people, that a true-hearted Virginian would almost as soon think of committing suicide as of giving up his native home—the graves of his parents, relatives and friends—all that from his childhood he was taught to hold most dear, for any new state or country on the face of the earth.

And now, my brethren, one and all, I must bid you farewell, perhaps—and not improbably, for the last time. Should it be so, listen, I pray you, to my parting entreaty: cherish our society; keep it up; and however feeble may be the encouragement given to it *here*, where it should surely meet with most; however small may be its annual accession of members, let the few faithful friends of our cause constantly bear in mind the all important fact, that there is no other way yet devised so well calculated to promote the husbandry of this or any country, as that of organizing and maintaining, in the proper spirit, *societies of agriculture*.

PREMIUMS AWARDED BY THE AGRICULTURAL SOCIETY OF FREDERICKSBURG.

Annual meeting, November, 1839.

The premiums were awarded as follows, viz:

To Garland B. Taylor, of Louisa county, for his common blood stallion, Expunger, $10
" J. Cole Dickinson, of Louisa county, for his mare, Bett Badger, - - - 10
" A. B. Hooe, of King George, for his three-year old filly, Tranquillity, - 10
" G. B. Taylor, of Louisa, for his riding horse, - - - - - - - 10
" John Stuart of K. George, for his jack, 10
" George Hamilton, of Spottsylvania, for his mule colt, - - - - - 5
" Thomas Scott, of Orange, for his bull, Boliver, of the Durham breed, - - 10
" John Ferneyhough, of Spottsylvania, for cow, of the Alderney breed, - - 10
" F. W. Taliaferro, of Spottsylvania, for grass fatted beef,* - - - - 5
To George Rowe, of Spottsylvania, for the best ram, - - - - - - 5
" Wm. C. J. Rothrock, of Spottsylvania, for the best ewe, - - - - - 5
" George Rowe, of Spottsylvania, for mutton.†

Domestics.

To Mrs. Dickinson, of Louisa, for the best suit of clothes, of domestic manufacfacture, the same having been worn by Mr. Dickinson at the fair, - - $10
" Mrs. Virginia Scott, of Orange, for a carpet, - - - - - - - 5
" Mrs. Hamilton, of Spottsylvania, for a piece of negro clothing, - - - 5
" Miss Stevens, of Stafford, for a piece of plaid, - - - - - - - 2
" Mr. Lyon, of Fredericksburg, for 4 oz. sewing silk, - - - - - 5
" Mrs. Hunter, of ditto, for a pair of silk hose, - - - - - - - 2
" Miss E. Richards, of Culpeper, for a pair of worsted hose, - - - 1
" Mrs. Mary Rothrock, of Fred'g, for a cotton counterpane, - - - - 3
" Mrs. Mary E. Brooke, of Spotsylvania, for a yarn counterpane, - - - 3
" Mrs. Mary Rothrock, of Fred'g. for a piece of domestic flannel, - - - 5
" Miss Went, of King George, for a quilt, 2
" Miss Bond, of Essex, for a cap, (discretionary premium,) - - - - 5
" An orphan girl, for a beautiful tippet, made of ducks' feathers—a discretionary premium of - - - - 5
" Mrs. Mary Rothrock, for a piece of jeans and piece of linsey, each - - 1

Vegetables.

To Doct. E. P. White, of Caroline, for the best Irish potatoes, - - - $5
" John Ferneyhough, of Spottsylvania, for the best beets, - - - - - 5
" Wm. Jackson, of Fred'g, for the best cabbages, - - - - - - 5
" Wm. Jackson, of ditto, for the best celery, - - - - - - - 5
" Wm. Jackson, of ditto, for the best salsify 5
" Wm. Jackson, of ditto, for carrots, - 5
" Robert Ellis, of ditto, for parsnips, - 5
" J. Ferneyhough, of Spot'a, turnips, - 2 50
" John R. Spotswood, of Orange, for apples, - - - - - - - 2 50

JOHN S. CALDWELL, *Sec'ry.*

* The committee on grass-fatted beef, reported that they would have awarded the premium to Mr. Lewis Shumate, of Fauquier, if his cattle had been entered in time.

Mr. F. W. Taliaferro, to whom the premium was given, presented it to the society.

† The committee on mutton, reported that they would have awarded the premium to Mr. John B. Gray, of Stafford, if his mutton had been entered according to the rule of the society.

RUTA BAGA AND THE GARDEN FLEA.

From the Farmers Monthly Visiter.

Mr. Editor.—I believe it is a principle at common law that no man shall profit by his own misdoings; but laws are not always just, and there are few principles which do not admit of exceptions.

Last spring I planted about half an acre of ruta baga, on land that was manured with long manure from the barn-yard, and before the plants got fairly started, the weeds got ahead of them, and being busy about other matters, I neglected to hoe them until they were completely overrun with weeds; and seeing my neighbors' plants entirely devoured with the garden flea, I felt but little disposition to neglect other work to weed mine, from the impression they would meet the same fate. One day I discovered a few straggling plants making their way through a thin spot of weeds, which induced me to examine the piece. I found the plants to be perfect and entire, not one having been molested by an insect of any description. I hoed and thinned them out, and in ten days I had the handsomest and forwardest yard of turnips in the town, and I have no doubt that by my negligence in not hoeing them, I have gained over one hundred bushels of fine roots. Many of my neighbors will not have forty bushels from a piece as large as mine, while I shall probably get two hundred. I would therefore suggest whether neglecting to weed turnip plants until the 20th or 25th of July, will not prove an effectual safeguard against the depredations of those insect intruders. CYRUS SLACK.

PROMISCUOUS REMARKS.

For the Farmers' Register.

The maturing of corn hastened by early ceasing to cultivate the crop.—In the October No. of the Farmers' Register, page 588, a Fairfax cultivator treats on the above-mentioned subject, in a recommendatory manner; from which I beg leave to dissent. Taking into the count both latitude and departure, my locality is about equal to that of Fairfax, and I am certain I have ever profited by cultivating my corn to the 10th or 15th of July. About 25 years past, I cultivated a crop of corn till about the 10th of August, which proved to be too late, although planted at the usual time; for it was caught by frost. Would the author of the above communication please spare a few more moments, by responding to the following. What kind of soil was your crop on? What kind of corn was planted? Do you suppose the produce was equal to what it would have been, had you given late tillage? If the produce was less, do you suppose the "saving of time" was equal to the loss of grain? By early ceasing to cultivate, would not a host of weeds and grasses appear to the injury of the crop, and to the impediment of putting in small grain? Never mind Mr. Fairfax, this stricture may be of service, both to you, myself, and the community; particularly if said stricture may be refuted. Your laying out, and cultivation of the corn crop, is my practice on porous levels.

My own preparations and intentions for 1840.—Nearly all the ground intended for corn next year, was fallowed in July, August, and September last, and is now in oats, rye, and wheat, either sowed or volunteer; which has been grazed, and the grazing will be continued till spring. The oats are yet green, are the best grazing, and will not be killed by the frost till about Christmas. I shall not cultivate more than one-third of my usual quantity of ground in corn, but by neat tillage, I intend to make my usual quantity of bread. My attention is much turned to grazing, therefore, grass, oats and rye, both green and cured, are equally as important as corn. (The word maize, is with us nearly obsolete; we say corn, wheat, &c.) A few days past I finished spreading on my intended corn-land, the remains of my last winter's stock of manure, amounting to 242 heavy ox-loads; and next spring the remainder of the plat will be manured with the accumulation through the winter, of the cow and horse yards. My mode of depositing the loads, is according to the rule of Col. Taylor, as laid down in his Arator; and the piles are not spread till there is much likelihood of rain. After a soaking rain, I believe there is but little, if any evaporation at this season of the year. Indeed I have spread manure in the months of August and September, on a stubble or other unappropriated field, and supposed that I had sustained no loss.

My bottom lands are fallowed and put in some crop nearly every year, (meadows excepted.) Those crops are, promiscuously, Indian corn, wheat, rye and oats; and whenever and wherever any of the small grains fail to produce a profitable crop, they are turned under for improvement. So soon as those grains begin to ripen, this operation is performed, and if seasonable, heavy second crops may be expected. I sometimes sow rye after rye, wheat, corn or oats; oats after oats, rye, wheat, or corn; wheat, after corn or oats. I also sow some millet, which shall go hereafter in part to improvement.*

I am now collecting, and intend to collect a goodly supply of tobacco stalks, and other tobacco offal, which are to be ground in a bark mill if practicable, if not, pounded in a trough, to be used as manure, a handful mixed with gypsum, in each corn hill.

The whole of my corn crop is intended to be watered from a creek; the greater portion of the ditches have been made and used for this and other purposes for fifteen years. So soon as the culture of the crop is over, the water is let on the fields, and the corn at this stage of its growth is much benefited thereby. Natural grasses grow so luxuriantly amongst the watered corn, that there is no chance of seeding either fall or spring, till the fallow plough has been used. I have never yet sowed any kind of small grain at the last dressing of corn, to be watered for the purpose of grazing; but am inclined to think that rye and oats would answer the purpose; either of which would head before winter.

Although I am not running for a premium, other than that offered by my corn crib, yet I am very solicitous to do my duty—to do my utmost. Many of my neighbors already laugh at me for being a book farmer, although they cannot laugh at my crops; now if I fail of a great crop or a small space, they may have just cause for laughing. I am at a loss to determine on the proper tillage before culture, and beg leave to call on Mr. Ruffin to assist me in this dilemma. My corn plat is generally a strong loam; now shall I plough it immedi-

* Our correspondent will render good service to the cause of agricultural improvement by furnishing particular and detailed statements of the operations which he here mentions generally. There are but few subjects of more importance than green manuring, and none on which there is less information.—ED. F. R.

ately, again in March, and again immediately before planting? Shall I plough it twice, and when? Or shall I plough only once, and when? Shall I use the cultivator and harrow, and when? The ground is already well pulverized, and from this time till April, a considerable flock of sheep will be on it.*

Oat pasture &c., by W. Young.—It was this writing of Mr. Young, which first started me to making experiments on oats, and I am pleased to see the publication in the Register, this being sufficient evidence of the editor's approval. I know thar the editor will excuse me for the following correction, October No., page 583, for "it is to be expected, &c.," read, "it is not to be expected, &c." See Memoirs Phil. Agr. Soc., page 194, vol. ii.

Judge Peters says in unqualified terms, that the oat crop is a great exhauster. I wish I were half so good a farmer as Judge Peters, but with due deference to his better judgment, I beg leave of his honored ashes to say, that oats on clay is an improver, until by oats, the clay is made sufficiently porous for the production of other crops.

Beets.—This year, I cultivated three-fourths of an acre of ground, on the top of a high mountain, in beets, which produced about 420 bushels. They were sowed quite late in consequence of which, and the then drought, they were not over half thick enough; and the after drought must have reduced the production at least 50 per centum. Thus, it is found that I made at the rate of 560 bushels to the acre, but under favorable circumstances, I would have made nine or ten hundred bushels. They were on black virgin soil. The greater portion was white sugar beet, second, mangel wurtzel, third, yellow sugar beet. The white was best, yellow second, mangel wurtzel sorry; which inferiority in the last mentioned I attribute wholly to deception in seed. They are intended for hogs, and are now secured. The patch being some two or more miles from any residence, I much dreaded their destruction by wild animals, but they were not touched.

I again solicit the editor's attention and remarks on my intended corn crop, or any, or all this hasty scrawl. MOUNTAINEER.

Amherst, Nov. 11th, 1839—Snow storm from east.

BOTS IN HORSES. MURRAIN IN CATTLE.

From the American Farmer.

It is the duty of every person who has any experience in the treatment of diseases in that noble and useful animal, the horse, to communicate it to the public.

It was my province a few years since to have much to do with that noble animal, and of course among the number in my possession, I would find a number that would be diseased, and very often my skill and experience would be taxed to find a remedy for some of the diseases to which they would be very often subject.

The most formidable disease to which this noble and useful animal is addicted, and there is none more alarming in its attacks, is the bots.

I had consulted the highest authorities in the veterinary art for the treatment of this disease, and faithfully used the remedies laid down, without any benefit. I was induced from interest, and also for the very high regard which that noble animal, the horse, held in my estimation, to use every expedient in my possession, to cure this formidable disease. I had another motive—I had lost several very fine horses by this disease, which induced me to use and try every experiment which my ingenuity could invent, to arrest this disease among my horses, and prevent if possible, its recurrence among them.

I am satisfied, and feel convinced, that I will offer to the public, an infallible remedy for the bots.

Some six years since, I purchased a very fine horse, but had the appearance of laboring under some disease. I commenced a course of treatment, which I thought would relieve him, and which I had pursued in the treatment of some other horses which had the appearance of being diseased in a similar manner to the above mentioned horse, with decided relief; but in this case all my remedies failed of their desired effect.

I was induced to try the use of lime in the treatment of his case, as I was confident he was filled with grubs or bots, as he had discharged several. I commenced by giving him a tablespoonful of slaked lime three times per week, in bread mashes. After pursuing this course near two weeks, the bots began to pass off in quantities varying from 10 to 20, which he would expel during the night, from his intestines. In the meantime his appetite began to improve, and in six weeks he was one of the finest looking geldings I ever saw. From that day to this, I have kept up the use of lime among my horses, with decided benefit. As an evidence of its good effects, I have not lost a horse since I began to use it.

A large number of the bots which he would expel from his intestines, had the appearance of being dead. I was induced from this fact, to put some of them in a strong solution of lime-water, as I had frequently put them in spirits of turpentine, without producing any effect on them; but all those that I put into lime were perfectly dead in eight and forty hours.

Lime is a certain preventive in keeping cattle from taking the murrain. As an evidence of this fact, I have used it among my cattle three times per week, mixed with salt, for three or four years. In that time, I have not lost a single cow, or steer, or ox, by this disease; in the meantime, some of my neighbors have nearly lost all the cattle they owned.

I will give you a stronger case than the one above mentioned. One of my neighbors who lost all his cattle, had a neighbor living within two hundred yards of him, who had several cattle which ran daily with those that died, and his cattle all escaped. He informed me he made it an invariable rule to give his cattle salt and lime every morning.

I have no doubt it is a sure and infallible remedy for bots in horses, and a preventive of murrain among cattle. J. W. J.

Red House, N. C., Nov. 16th 1839.

* There are too many circumstances involved in the case submitted, and some of them too imperfectly known, for us to presume to offer any opinion, or answer to the above questions.—ED.

DIARRHŒA IN HORSES.

From the Franklin Farmer.

Mr. Editor.—Some days past, a person, who, doubtless, had heard that I could advise him what to do with a colt taken with a looseness of bowels: after having satisfied him as far as my knowledge permitted, I thought that the information might be serviceable to others. Colts are subject to the diarrhœa two or three days after their birth, like children, by the accumulation of matter in the intestines during their stay in the womb. Their excrements are yellow and fœtid. This evacuation is accompanied by a failure of appetite and weakness, lasting for a short time. If the looseness continues, the colt becomes very poor and dies. These accidents often proceed from the unhealthy state of the mare, or a too great indulgence of green food towards the last two or three months before foaling. It may have been observed that all the horses permitted to pasture in the spring, or fed on green grass in the stable, are more or less subject to a diarrhœa, which in most cases stops of itself after having purged naturally the animal; but in other cases it may become inveterate and and fatal, according to the previous state of health of the animal, who might have had a beginning of that disorder, which is often the case after foaling or abortion. It is prudent to watch closely and guard against a diarrhœa that lasts more than two or three days, but avoid to contradict nature, which might produce worse consequences, for this looseness is caused in foals and (calves) by the purging quality of the mother's milk. When, however, it lasts too long, I use for colts from 3 to 4 oz. of rhubarb mixed with molasses or endive syrup, or assafœdita, for three or four days only; one ounce of this last for each dose diluted in warm water. If the colt is older, the disorder may be caused by worms, in which case chimney soot in new milk, from half an ounce to two ounces according to the age of the colt, should be given to him. When the diarrhœa attacks a full grown horse, it is often necessary to purge before stopping the disease, and to consider what was his general health previous to that particular disease. W. MENTELLE.

REMARKS ON FRUIT TREES.

Form the Franklin Farmer.

The following are equally appropriate to apple and pear trees. Those trees, in order to last long and bear well, should be dug about one foot deep and two feet around towards the end of October. The dry and dead limbs and the bad ones cut off—the outward rough and creviced bark carefully scraped, either with a rasp or any instrument for the purpose. This may be done in February, taking care not to hurt or damage the inner bark; if the live bark be touched, the wound should be covered with an ointment made of cow dung and clay mixed together with urine. This will do well also to apply upon those parts of any tree that have been pruned. The hole around the trees must be filled up early in March with new earth. The peach tree must be pruned at the end of the winter, and the wound to be covered with the above composition. Nature has designated the most proper time to plant the best peach stones; as those which fall on the ground when the fruit is ripe, and are buried by hogs or any thing else, most certainly grow better than if we plant the dry seed which we generally plant without success. As soon as you see and eat such peaches as are worth having, put the kernels in the ground, in a trench of six or seven inches deep, cover them well and they will all or nearly all come up the following spring. To rub a pear or apple tree with fish oil after scraping, is, I think, advisable, as a pear tree 5½ feet circumference, thus treated, has revived this year, and instead of an almost dead condition, was of superb foliage and bore fine fruit which it had not done for the last three years.

W. MENTELLE.

PROCEEDINGS OF THE NORTH ANNA AGRICULTURAL ASSOCIATION.

To the Editor of the Farmers' Register.

The inclosed communications were made to the North Anna Agricultural Association, at a late meeting. In compliance with a resolution adopted by that association, I now transmit them to you. Should you be of opinion, that a publication of them will in any respect promote the interests of agriculture, you are at liberty to give them a place in your valuable periodical.

Very respectfully, I am,
Your obedient servant,
W. HOLLADAY.

December 3rd, 1839.

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Cultivation of sugar beet.

To the Chairman of the North Anna Agricultural Association.

In compliance with a regulation of this association, I make the following communication on an experiment made by me during the present year, in the cultivation of the sugar beet.

The ground selected for the purpose was a lot containing 29,123 square feet, (83 square feet more than two-thirds of an acre,) on which for more than twenty years my hogs had run a part of the time I was fattening them. Throughout this period the lot had borne *annually* a crop of Indian corn, intermixed with beans, peas, and Irish potatoes. Nevertheless the land had been kept in good condition by what came from the hogs, and I gave no additional manure to it. The greater part of the lot lies sloping to the south-west. The soil is what we usually call gray, with a good substratum of clay.

Not having determined to cultivate the beet until early in the spring, I had neglected to have the lot ploughed as soon as it ought to have been. The land was still hard from the trampling of the hogs. In the month of April, after a rain, it was coultered as deep as two strong horses could pull the coulter; nearly up to the beam of the plough. It was then ploughed to about the same depth. After this it was harrowed with a heavy harrow drawn by two horses. By these different operations the land was brought into good tilth. To prepare it for the reception of the seed, ridges were thrown up, about two feet and a half apart, by turning together two furrows of a large plough. A harrow was then drawn upon these ridges

lengthwise, by which they were considerably flattened. Having no drill-barrow, I adopted the following expedient for the purpose of distributing the seed equally. Pins were driven into the wheel of a common wheel-barrow, pointing towards the centre, at such a distance apart, that when the wheel-barrow was rolled lengthwise on the ridges, small holes were made upon them by the pins seven inches and a half apart. Into each one of these holes a single seed (I should rather say capsule*) was dropped by the hand, and covered with fine earth to the depth of nearly an inch. This was done about the middle of April. Previous to sowing the seed they were put into warm water, and soaked for twenty-four hours. A small quantity of ashes was then intimately mixed with them, for the purpose of separating the seeds. The season being uncommonly dry, they germinated slowly, and came up badly. So unpromising indeed for some weeks was the appearance of the beets, that one time I had thoughts of ploughing up the lot, with a view of cultivating it in some other crop.

When the beets were large enough to be distinctly seen, the intervals between the rows were ploughed with a shovel-plough drawn by one horse; the hoes followed, care being taken to pull up with the hand every weed and spire of grass near to, and around the beets. In this manner they were weeded, at proper intervals, three times; though I do not know that the third weeding was necessary. On the second day of November the beets were taken up. This was done by running a single furrow of the plough on each side of every row of the beets, and then pulling them up with the hand. The product was at least *six hundred bushels;* nearly eleven ox-cart loads of fifty-six bushels each.

I have said that the lot contained 29,123 square feet. There are on an acre of land 43,560 square feet. Consequently the lot produced at the rate of eight hundred and ninety-seven bushels per acre. Nothing has been guessed at; the beets were measured,† and the lot carefully surveyed. The product would have been greater, if the beets had stood well. In various parts of every row there were spaces of eight or ten feet with not more than four or five beets. In addition to this disadvantageous circumstance, a strip of flat land on one side of the lot was made much too wet for the beets, by repeated rains in the latter part of July, and throughout the month of August. On this strip the beets were very small, and added but little to the product of the lot.

Chaptal, the eminent chymist, and practical agriculturist, after an experience of many years in the culture of the beet, thus expressed his opinion of it: "I believe this plant may be cultivated as food for cattle, more advantageously than any other."‡ I can say from experience that cows fed on the sugar beet yield rich and well tasted milk. A peck of the beets given in the morning, and as much at night, with other ordinary coarse food, is a good allowance for one cow. Six cows then will consume three bushels in one day, or six hundred bushels in 200 days (6 months and 20 days.) How much Indian corn per day will make the milk of a cow as valuable, as will two pecks of beets, due allowance being made for the quality and quantity of milk? I am confident that no injustice will be done to the corn, by supposing that half a gallon given in the morning, and as much at night, with other ordinary coarse food, will make her milk equally valuable. Six cows then will consume six gallons of Indian corn in one day, or 1200 gallons in 200 days. To produce 1200 gallons, or *thirty barrels* of corn, at least three acres of land, as well manured as that cultivated in beets, will be required. According to this calculation, the product of about *two-thirds* of an acre in beets will go as far in feeding milch cows, and yield as great a profit, as the product of *three acres* in Indian corn. How great the superiority on the side of the beets, and what a saving of *manure*, of *land*, and of *labor!*

Almost every farmer in this part of Virginia must have felt the want of some root crop for his live stock, during the winter months and early in the spring. I know of none so well adapted to our climate as the beet. It is less injured by the long droughts of summer than any root that I know, and produces a larger crop. The late able conductor of the 'Cultivator,' I think, doubted the propriety of cultivating this crop in the southern states; believing the country "north of 42" to be the favorite region of the beet. The experiment, which is the subject of this communication, shows, that on soils *adapted* to the beet, and *well* manured, even *here* about the latitude of 38, as much as eight hundred and ninety-seven bushels per acre, in seasons as favorable as the last, may be reasonably expected; or, supposing the beets to weigh on an average 50 lbs. per bushel, rather more than *twenty* tons; an amount of product *much more* than sufficient to compensate the farmer for the labor and attention bestowed on it. But let it not be forgotten, that good preparation and careful culture are absolutely necessary to success. "The produce of a field which is well taken care of," (says Chaptal,) "is at least double that of one which is neglected."* W. HOLLADAY.

Spottsylvania, 28th Nov., 1839.

* One capsule contains generally more than one seed.

† The body of the cart *even* full contained 56 bushels. The loads were *heaped*.

‡ Chemistry applied to Agriculture, page 130.

ON UNDER-DRAINING.

To the Chairman of the North Anna Agricultural Association.

I have thought proper to bring the subject of under-drains to the notice of this society, having myself experienced some loss of labor from the want of them, as well as profit from their use.

It is well known to you, sir, and to all present, that wet *sobbed* land, while in that condition, is generally the most unprofitable portion of the soil to its owner. If he attempts to derive a profit from it by grazing, its product, being very rough and coarse, is rejected by every species of stock, so long as they can get a tolerable supply of that which is more tender and succulent. Only when pinched by hunger will they resort to the product of such land. If he attempts a profit by culture without draining it, his effort will be in vain. Should he leave his drains open, they (being

* Chemistry applied to Agriculture, page 321.

small) will, after a winter's freeze, and a summer's rooting of the hogs, be nearly filled up. Consequently before he can plough again to profit, he must re-open his drains, and so continue to do at every rotation.

My method is to make the drains eighteen inches wide at the top, eight at the bottom, and eighteen deep. I cut the drains at the lower edge of the hill, and fill them to the depth of ten inches with rocks of any description, except very large ones, thrown in promiscuously; reserving such as are flat for a top layer to prevent the earth from getting through. I then put on a layer of shavings, if convenient; if not, inverted sods. (The rush dug up with the roots answers very well.) The earth, which has been dug out of the drains, is then drawn back; and the work is done for years, and for aught that I know, for ages.

I would recommend in all cases to commence filling at the upper end of the drain; and should any earth fall in below the rocks, let it be removed; and also the thick mud that may accumulate before filling in with the rocks.

The advantages of drains thus made, Mr. Chairman, are briefly the following. The work once done is permanently done; the higher lands above the drains are cleared from the obstruction of rocks and stones; the mud below becomes dry and tillable; and the hopes of the farmer are more than realized in the abundance of his crops.

L. JOHNSON.

November 28th, 1839.

HOW TO DRY PUMPKINS.

From the Maine Farmer.

Mr Editor:—Perhaps it may not be generally known that the more expeditious, as well as economical method of drying pumpkins for domestic use is in the following manner. Prepare the pumpkin and stew it the same as for immediate use, then lay it on trenchers or tiers and dry it (not bake or scorch it) before the fire, or in the oven moderately heated, after baking. Care should be taken after it is dried to keep it as much as possible from damp air in wet weather, otherwise it may mould. All that need be done to prepare it for use is to soak it in milk or water some six or eight hours previous to its being wanted. It should not be spread out like a Jennie cake on the tin, but rolled after the manner of biscuit, as it will frequently be necessary to turn it while drying. The above is communicated at the request of a good housewife whom you may call PRISCILLA.

West Sidney, Sept. 1839.

BRIEF NOTICE OF INDIAN KEY, WRITTEN BY A YOUNG GIRL.

Communicated for the Farmers' Register.

Indian Key, T. F., Nov. 15, 1839.

The islet of Indian Key, is situated in latitude 24° 48′, longitude 80° 55′, distant from the gulf stream 6 miles, from Key West, 19 north and 60 east, from Cape Florida, 53 south and 35 west, and from Cape Sable, 13 south and 14 east. It was settled in 1824. At that time it was remarkable for nothing but a battle, fought between the Indians and a French crew that had been cast away, in which the French were horribly murdered, and from that circumstance it took its name. It is composed entirely of coral rock, and is of only 12 acres in extent at low water. The south-east side is composed of rugged rocks, but these are not destitute of verdure; in the fissures of the rocks a saline succulent plant, known under the name of *sesuvium*, takes root and brings a vine, soon covers a large part of the otherwise barren rock; it is much like the barilla. The remaining part of the island, instead of being covered with grass, is carpeted as it were with an aromatic herb called tea binkum, resembling the thyme of the north; pepper grass in a wild state is also abundant. The common weeds are the periwinkle or Madagascar rose [*vinca rosea,*] the yellow prickly poppy, [*argemone mexicana,*] the white prickly poppy, and different varieties of the morning glory. On a Christmas morning, instead of a waste of snow greeting our eyes, we look only upon *ever blooming, ever green foliage.* On the north-east side of the island, extensive wharves are built out; on the west is a sandy beach with a large sea side grape tree, [*coccolopa uvifera,*] whose roots are even washed by the flowing tides; the fruit tastes much like the cherry, but grows in clusters like the grape. On the south, there is a large hotel, which is now open for the accommodation of travellers; and from the salubrity of the climate and the pleasantness of the island, which has been happily styled a "*gem of the ocean,*" affords an inviting resort for invalids from the north. Near the centre of the island, there is an open square which I suppose might be denominated the village green; on the north-east side of the green, are built four very neat cottages and a large store; on the western side, is the dwelling of the inspector of the port, whose yard is well stocked with morus multicaulis trees which are covered with their luxuriant foliage the whole year round. He has a young guava tree, which is now loaded with fruit in its different stages, from the blossom to the perfect fruit. He has also the fig, the fast growing pride of China, [*melia sempervirens*] the Paradise or [*moringa pterigosperma,*] horse-radish tree, the *coidia sebestina* or geiger, the *princiana pulcherima*, the *agati coccinea* or scarlet dragon tree, castor oil tree, and last, though not least, the Spanish bayonet, [*agave floridana.*] It was transplanted from one of the adjacent islands in March of 1839, it was then about four feet high and the leaves two feet long; in the last of August it began to send up a straight green stem about six inches in circumference, it is now 25 feet high, and crowned at the top with a large bunch of flower buds; it is a curiosity which might well be an object of envy to proprietors of green houses at the north. Opposite this yard is another in which may be found five species of cotton, at this time in blossom; the Indian almonds, [*terminalia catappa,*] the mamey apple, the aligator pear, the pine-apple, the *sapodilla*, the dwarf banana, [or *musica coccinea,*] the *heliconia bihai*, the *hedychium coronarium*, the *achania malvaviscus*, the *tecoma capensis*, *cobela inflata*, *&c. &c.* On the north-east side of the island is situated the house and yard of the proprietor of the island; it is shaded by the splendid cocoa-nut palm of different sizes. The oldest were planted in 1825, and are now bear-

ing, yielding a bunch every month in the year. He has also a few of the date palms, the gooseberry tree [or *ciccaracimosa.*] the pomegranate, hog plum, white malaga grape, plantains, bananas, papaws, red mulberry trees, coral trees, and various other ornamental trees and shrubs. On the side of the island facing the gulf stream, may be found the seven year apple, the gumbolimbo tree, [*bursera gummifera,*] which is valuable for fence-posts on account of its tenacity of life; for it immediately takes root, and in a few years large trees are formed from every post. That which first attracts the attention of a stranger when viewing the variety of plants and their rapid growth, is the *remarkable fact*, that we have not a particle of either sand or clay, the soil being purely carbonate of lime tinged with vegetable mould. And to a traveller, the contrast between this and the northern states at this season of the year is truly delightful. To day the thermometer has been at 83° and every thing abroad is sunny and beautiful, like a day in June at the north; indeed it is here almost a perpetual summer, and with our refreshing sea breeze, salubrious climate, sunny skies, ever blooming verdure, and purely calcareous soil, who can deny that this is truly a "*gem of the ocean?*"

EXPERIMENT OF COMPOST MANURE FOR CORN.

For the Farmers' Register.

In the fall of 1838, I penned my mules while seeding of wheat, and littered the pen with corn-stalks, top-fodder, oats and straw. In March, there being a considerable portion of, as I thought, good manure for corn, but not enough to manure more than 20,000 corn hills; I concluded to put pine leaves or beards, and lime with the manure. Therefore I put manure at the ground, then pine beards, then lime, then manure and so on, until it was all heaped; let it lie until the the corn was planted, and then manured 50,000 [corn-hills] in the hill. This corn was not injured at all by the chinch-bug, although they were to the very rows on the other corn that was not manured or limed. There was about 4 bushels of lime used in this manure, and the mules were penned about three months. The land would not have produced more than two barrels of corn to the acre, but for the experiment; it produced at least six barrels to the acre, this the 31st of October, 1839.

SAMUEL W. COUSINS.

Chestnut Grove, Amelia.

DESCRIPTION OF A FARM IN THE WESTERN EXTREMITY OF EASTERN ROSS, ROSS-SHIRE [SCOTLAND.]

Presented by Mr. John Baigrie.

From the 'Reports of Select Farms.'

This farm, consisting of about four hundred imperial acres, was, prior to 1825, occupied by numerous small tenants, who farmed the land on the old system which prevailed in the highlands of Scotland about fifty or sixty years ago—viz., the continued occupation of the ground by some description of corn crop, with exception of the small portion allotted for potatoes.

Their rotation—if rotation it may be called—consisted of oats, chiefly of the dun or black variety, which were continued to be sown in the same field in many instances for five or six years, or so long as the produce yielded two returns. When thought sufficiently exhausted, a portion was then manured in the spring for bear or bigg, and for potatoes—succeeded again by oats, which were continued until the effects of the dung were no longer visible, when the land was allowed "to rest"—*i. e.*, to remain unploughed for a period of years, producing nothing but weeds, with a small portion of indigenous grasses, no artificial seeds being ever sown.

The arable land of this farm was detached in small patches, of from two to three acres, interspersed with considerable tracts of brush-wood and uncultivated ground, on which stones, which have for centuries been collected from the land, have been allowed to lie. In addition to this accumulation of small stones, large masses of blue granite lay amongst the arable ground, above and immediately below the surface, so as to offer considerable interruption to the plough. The land was besides in a very wet state from the many springs issuing out of it, and there being no drains nor ditches to carry them off. So much was this felt in some seasons, that it was frequently the month of May before any corn was sown.

Such was the state of the farm in March 1825, presenting serious obstacles to improvement, but at the same time possessing capabilities which could not be overlooked, and which promised ample remuneration for the expense proposed to be incurred.

As the farm which forms the subject of the following remarks was, at the period alluded to, almost in a state of nature, the writer, in the hope it may prove useful, purposes giving a detailed account of the various operations connected with its improvement.

The farm lies on the slope of a hill and facing the south, and consists of two varieties of soil. 1st—a clay loam of from twelve inches to two feet deep chiefly upon an open gravelly subsoil. 2d—gravel mixed with a large portion of black mould from six to fifteen inches deep, also on a pervious subsoil.

Possession of the arable land having been obtained in the spring of 1825, in consequence of the right to the sowing of the crop of that year by the former tenants having been purchased from them, as well as the manure they had made from the previous crop, operations were commenced on the farm in the month of March. The first object was to lay off the arable land, as well as what was intended to be trenched, into fields of a regular shape, varying in size from twelve to twenty-five acres, according to circumstances, when such of them as could not be taken in hand in one season were sown with oats so far as the arable land extended. One field was selected for turnips and another for fallow; but from the scarcity of manure, in the first season, the sowing of both wheat and turnips was necessarily confined to a small scale.

Draining.—As draining was evidently the first necessary operation, a number of laborers were

employed for that purpose, who executed the work by the job or piece. The drains were cut from three to four and a half feet deep, according to the nature of the substratum, two and a half feet wide at the top, and sixteen inches at bottom—the width at the top varying in proportion to the depth. Stones were then put in to the height of thirty inches, an opening of six inches square being left and built in the bottom to prevent the sides of the drain from falling in and thereby impeding the running of the water. Above the stones, a covering of dried weeds, gathered from the land, was laid, to prevent the mould from mixing with the stones; after which the drain was filled up, taking care to throw in the subsoil first The expense of opening and closing was two-pence per ell of thirty-seven inches, and a half-penny per ell for carting the stones, making the whole expense of the drains three-pence per lineal ell. This sum appears a low price for the work, but an expert laborer, although he should require to use the mattock to gain twelve inches of the depth, will, at the price, earn from two shillings to half-a-crown per day.

Blasting stones.—While the draining was going on, men were employed to blast the large stones, some of which lay on the surface, while other showed only a small portion above it, and many were not discovered until the field had got the first ploughing. These stones, the greater number of which would weigh several tons, were blasted with gunpowder to a size which would enable two men to lift the pieces into a cart. Such of the stones as were below the ground, or had a part only buried, the contractor for the blasting was bound to clear around them, *i. e.* expose the whole of the stone to view, for the reason that, when the stone exploded, it might have room to fly asunder. When this operation is neglected, much labor and expense are lost. The expense of boring, blasting, and clearing the stones, including gunpowder, was fifteen pence per foot of bore, but latterly, by competition, was reduced to a shilling per foot. Many stones required thirty feet of bore to reduce them to a size fit for building stone fences, to which purpose they were to be applied.

Trenching.—As the two fields intended for turnips and fallow contained several acres of uncultivated ground, chiefly covered with hazel, alder, and birch wood, these were trenched by the spade to the depth of sixteen inches, turning up all the stones except those requiring to be blasted. The draining and stone fences going on at the same time, these stones were immediately carted off; the large to the fences, and smaller ones to the drains. The expense of trenching varied considerably, according to the hardness of the soil, quantity of stones in it, and thickness of the brush-wood: in general, where all these prevailed, the expense was fourteen pounds per acre; when not covered with brush-wood, eleven pounds per acre.

Fences.—On one side of a field in which drains were cut, a ditch was usually formed, both as a fence and as a conductor of the water from the drains, in one side of which a hedge was planted, formed of a single row of white-thorn, paled on that side to protect the hedge until it should be able to protect itself. The dimensions of the ditches are seven feet wide at the top, three and a half feet deep, and eighteen inches wide at the bottom. The expense, including the setting of the thorns, was sixpence half-penny per ell.

It has been found from experience that where there is a considerable fall in the ground, as on the farm described, the ditches which follow the slope of the hill should have been causewayed in the bottom, to prevent the injury done to them by the winter floods. This might have been done at a comparatively trifling expense before the small stones in the adjoining fields had been otherwise disposed of.

Where ditches were not necessary for the purpose of carrying off water, dry stone dykes or walls were built, both as being the preferable fence where cattle or sheep are pastured, and for the purpose of using the stones which were procured from the trenching and blasting. These dykes are three feet at the base, and carried to the height of four and a half feet of built work, tapering at the top to a breadth of ten inches, and topped above all with a Galloway coping, or stones placed on edge, of about ten inches high, making the whole height five feet four inches. The expense per lineal ell including the driving of the stones, which the contractor for the dykes generally performs, ran from ten pence half-penny to a shilling. The stones, however, were near at hand, which enabled the work to be so cheaply executed, and grass was found for the contractor's horses on the unimproved ground. The price for building is sixpence per ell, and the difference was allowed for the carriage of the materials.

Preparation for turnips.—The field already alluded to, which was intended for turnips, being sufficiently drained, and the stones and brush-wood cleared off from the arable and trenched land, so many ploughings and harrowings were given as were necessary to clean the field from quickens or root weeds, which were, after each harrowing, carefully hand-picked. The first three ploughings were not made deep, the more effectually to bring up the weeds; but after the cleaning process was ended, the land got a very deep furrow.

Liming.—The land of the farm described being generally of a rich and deep quality, but containing no calcareous matter, it was considered that the application of lime would be attended with beneficial effects, and the result has exceeded the most sanguine expectations. It being well known that lime acts more powerfully on new soil than on land which has been long in cultivation, it was desirable that some fresh mould should be taken up to mix with the old soil before the lime should be applied. For this reason a deep furrow, as already mentioned, was given to the land. Some persons for this purpose use four horses, but as those on this farm are very powerful, and the land not being of a cohesive nature, two were found competent to the task. The lime, which was all imported from Sunderland, was landed about four miles distant from the farm, and when carted to the field was laid down in a long heap or mound contiguous to water, if possible on one side of the field on which it was to be applied. Two laborers are then employed to turn the lime, and a third waters it. When the whole has been gone over, it is allowed to lie for four or five days, when it is again turned, and if any part of the lime should be found to be still unslaked, more water is added.

This mode of slaking lime is considered preferable to the very common one of laying down the

lime, as it is taken from the ship or kiln, in small heaps on the land, to be slaked by the atmosphere, or by the moisture of the soil, which in dry seasons, is thrown upon it. By the former method every particle of the lime is reduced to a powder, which seldom happens the other way. The only advantage attending the latter mode is, that the quantity per acre can be more correctly applied; but any one who has had experience of the method recommended, knows from the appearance of the lime on the ground whether it be above or below the intended quantity. It is apprehended the more effectual slaking of the lime, and consequently the more equal distribution of it on the land, more than compensates for the additional labor of turning, watering, and carting it out. The quantity per acre applied to the field for turnips was one hundred and eighty bushels. When the whole lime has been spread on the land from the carts, the field gets one turn of the harrows, both for the purpose of mixing the lime with the soil, and to prevent any of it from being carried off by high winds.

Turnip sowing.—At this stage the drilling for turnips commences, the drills being made twenty-seven inches apart, when the dung, which had been previously carted to the field and well fermented, is laid in the bottom of the drills, taking great care that it is regularly spread. This is of greater consequence to the success of the crop than is generally imagined.

In this instance no more than nine tons per acre could be allowed, as no other manure could be procured; and bone dust, now so generally and successfully used, was not known here at the time.

Sowing commences about the 8th of June, and continues till the end of the month, and is performed with a double drill machine in the usual way. The kinds of seed sown on this farm are field yellow, green topped white, and white globe, commencing with the yellow and finishing with the globe. Swedes were obliged to be discontinued, as the hares are so numerous as to destroy them before the season arrived when that valuable root is generally used. They could have been taken up and stored, but their quality would have been injured by long keeping. The yellow, which grow to a greater size than the Swedes, supply their place, as they stand the frost nearly as well, although their quality is deteriorated earlier in the spring, on account of their greater tendency to shoot.

The produce of the field first improved was very great; but as no portion of it was weighed, a correct estimate of the crop cannot be given—it considerably exceeded in bulk any crop the writer ever saw on old improved lands. This may be accounted for from the circumstances of a turnip crop being new to the soil, and from the application of lime to the fresh mould taken up.

Fallow for Wheat.—As the greater part of the dung purchased from the former occupants was applied to the turnip field, eight and a half acres only could be manured for wheat.

In the cleaning process the treatment was in every respect the same as in the turnip field. As the land is deeper and rather more compact, it got two hundred bushels per acre of lime, and about twelve tons of farm manure, both being applied immediately before the last or seed furrow.

Wheat sowing.—The seed, which was procured from a chalk farm in Kent, was of the white sort, and was sown about the middle of September, at the rate of three and a half bushels per acre.

Produce.—The eight and a half acres of wheat yielded the very great return of forty bushels per acre; and it may be mentioned that the last crop of oats which the same land produced to the former tenant, was so bad as scarcely to pay the expense of cutting it down.

In the following year a small field of twelve acres, treated in every way like the former, with this important exception, that it got no manure, produced thirty-six bushels per acre.

These great returns may be ascribed principally to the operation of the lime on a deep and naturally rich soil, to which no calcareous manure had ever been previously applied. But as the peculiarly fine season of 1826 must have had considerable influence on the productiveness of the crops of this farm, which is situated considerably above the level of the sea, it must be mentioned, that in no subsequent year did the crops yield so much, although the bulk on the land was frequently greater.

In the manner already described, improvement of the other fields was conducted until the whole farm had been gone over, which was nearly effected in November 1828, being little more than three years and a half since operations were commenced. It being an object with the propietor to carry on the improvements with all possible dispatch, a considerable number of laborers were consequently employed, which caused the improvements to be completed in little more than half the time that in ordinary cases would have been necessary.

It must be here stated, that, although from the scarcity of manure in the first season, the number of acres sown with turnips and wheat were necessarily very limited, other improvements, as trenching, ditching, inclosing, &c., were proceeding on a large scale.

It added in no small degree to the labor, that, during the period alluded to, upwards of fifty thousand bushels of lime were carted a distance of four miles to the farm, on a road of considerable ascent, and without any assistance from hired carters.

Establishment.—The farm, during the continuance of the improvements was worked by a bailiff, six ploughmen or carters, and three laborers, in constant pay, and six pair of horses; but as a considerable portion of the farm is now kept in grass, and two fields in permanent pasture or meadow, the number of horses is reduced to four pairs and a supernumerary horse.

Expense of improvement.—As it may be satisfactory to give an idea of the expense of the improvement of some of the fields, two are selected; the one the most expensive, the other the least so. But it must be observed, that in stating the items of expense, no price is put upon the labor of the farm horses in carting the lime, fallowing, &c., which would at least come to five pounds per acre.

21-*Acre field.*

Blasting large stones, - - -	£75	0	0
Trenching, 6½ acres, at 12*l.* 10*s.* per acre - - - - - -	81	5	0
Drains - - - - - -	3	0	0
Lime, 3,024 bushels (144 bushels per acre), at 6½*d.* - - -	81	18	0
Inclosing with stone dyke - -	52	7	0
Average, per acre, 13*l.* 19*s.* 6*d.*	£293	10	0

12-*Acre field.*			
Blasting large stones - - -	£8	16	5
Trenching - - - - - -	4	0	0
Drains - - - - - -	0	15	6
Lime, 2,304 bushels (192 bushels per acre), at 6½*d.* - - - -	62	8	0
Ditch for intercepting hill water -	7	10	7
Average, per acre, 6*l.* 19*s.* 2*d.*	£83	10	6

This last field is that alluded to as having yielded thirty-six bushels of wheat per acre after fallow without manure.

Rotation of crops.—All the fields on the farm having been gone over in the manner already described, the previously exhausted state of the land, from a continued course of bad farming, rendered it necessary that, in the first round of cropping, it should be allowed to remain in grass for two or more years, for the purpose of recruiting its strength. With that view each field, as improved, was sown down with red and white clover and perennial rye-grass, in the proportion of eight pounds of red clover, four of white, and one and a half bushels of rye-grass per acre.

An easy rotation, or such as would least deteriorate the soil, was therefore fixed on, and is now followed. On that part of the farm, consisting of a deep clay loam, the course commences with—1. Fallow, a small portion of potatoes and spring sown tares. 2. Wheat sown down with grass seeds. 3. Clover. 4. Pasture. 5. Oats.

On the lighter division the rotation is—1. Turnips. 2. Barley, with grass seeds. 3. Pasture. 4. Pasture. 5. Oats. It is probable that this may be the course of cropping which will continue to be pursued. A more profitable one could be adopted by extending the course, and introducing beans, succeeded by wheat, into the rotation; but as the farm, as already mentioned, is situated considerably above the level of the sea, and in the immediate neighborhood of high hills, the bean crop, in most parts of Scotland a precarious one, would, in this situation, be doubly so; and the further extension of wheat would also be hazardous.

Farm offices.—These are conveniently situated, being nearly in the centre of the farm, and are of the most approved construction, possessing ample shed room for cattle, granaries, &c., and have a water thrashing-machine of eight horses' power attached.

Roads.—Besides a county road, which bounds the farm nearly its whole length, there are cross roads, which intersect it at convenient distances.

Sheep walk.—Connected with the arable farm described, there is a range of moor ground, interspersed with valleys of green pasture, on which fifteen hundred sheep are kept, of the pure Cheviot or white-faced breed. Surface draining being much wanted in the valleys, many thousand ells of drains were cut, which have had the effect of increasing the quantity and improving the quality of the pasture. The dimensions of the drains are twelve inches deep and twenty inches wide, and are executed at a farthing per ell. The sod that is cut out is carefully placed at the edge of the drain, with the grass side up, to preserve the green sward. The sheep walk, in consequence of its being joined to the arable farm, has the advantage of superior wintering for the hogs or lambs, on account of the green food and shelter afforded by the woods that are attached to the farm. As the wedder lambs are annually sold, no turnips are given to the ewe lambs, but in lieu of them they are allowed the range of the clover stubbles, which has equally the effect with turnips of checking braxy, a disease that often carries off a large portion of the flock where clover stubbles or turnips cannot be obtained, laxative food being the only preventive hitherto discovered. The sheep are managed by a head shepherd and a boy.

General character of the district.—The district of Eastern Ross consists of soil of all the varieties of loam, from a rich deep clay loam to light sandy loam; and as the climate of the lower parts of the district is favorable for raising wheat, that grain is cultivated to a considerable extent, and the quality in general is fine. In a few instances the wheat from one farm has brought the highest price in Mark Lane.

On the first-mentioned soil the system of cropping is as follows:—1. Fallow and a small portion of turnips. 2. Wheat sown down with grass. 3. Clover. 4. Oats. 5. Drilled beans, potatoes, and spring-sown tares. 6. Wheat.

On lighter loams the rotation is—1. Turnips eaten off with sheep. 2. Spring-sown wheat. 3. Clover. 4. Oats. 5. Beans, &c. 6. Wheat; and on the light sandy loams the mode of cropping is—1. Turnips eaten off with sheep. 2. Spring-sown wheat and barley. 3. Clover. 4. Pasture. 5. Oats.

Advantages of eating off turnips with sheep.—The farmers of the second and last mentioned soils derive very considerable benefit from the neighboring county of Sutherland. In that county sheep farming is carried on systematically, and on a very extensive scale; and it forms part of the system to winter on turnips the wedder hogs or lambs of that season, as well as the weaker part of the stock. As the turnips raised in the county are not adequate to feed the proportion of hogs from an aggregate stock of 156,000 Cheviot sheep, together with the cattle reared in the country, the farmers have recourse to this district and to Ross-shire generally, to make up the deficiency. The consequence is, that many hundred acres of turnips are annually taken by the Sutherland farmers in this county, the advantages of which to the district are obvious, as the land on which the turnips have been eaten by sheep is so enriched as to enable many farmers to grow wheat where otherwise it would not be attempted.

It is the general practice to draw off one half of the turnips, taking every alternate drill, to give to cattle in the straw yards. This is required both on account of the necessity of converting the straw into manure, and to prevent the land, where otherwise in good condition, from being over enriched by the sheep.

Another reason may also be stated. As it is only after turnips that wheat, on such soils, is raised, it is important to have the field cleared before the 10th of March—the latest period, in this district, at which wheat is sown in spring.

The raising of wheat on light sandy soils has thus become a practice where, not many years since, it was unknown; and, as that grain produces more straw than any other, and consequently more dung is obtained, a greater breadth of turnips is the natural result.

Size of farms.—The size of the farms in the

district is, of course, various, depending on the extent of capital of the tenants; in general they run from two to four hundred imperial acres. The best description of lands let as high as two pounds per acre, while the inferior sorts are as low as fifteen shillings.

Very few cattle are fatted for the butcher, as the small towns and villages afford a limited consumption; but a spirited farmer from the south of Scotland, who rents two extensive farms in the district, has for several years been in the habit of feeding a considerable number of sheep, which he drives, a distance of about two hundred miles, to the Edinburgh market.

This tedious land journey will soon, it is hoped, be rendered unnecessary, by the adoption of a mode of conveyance to be afterwards noticed.

No dairies are kept, as, on account of the great distance from large towns, it is found more profitable to rear cattle on farms where a considerable portion is kept in pasture.

A considerable number of cattle are reared in the district, but as these are not sufficient for the consumption of the winter keep, the additional numbers are supplied from the Highlands of Sutherland and Ross-shire.

Almost all the farmers rear their own horses. At an earlier period, and before good stallions were introduced into the country, the local farmers' societies offered premiums for the best horses from Clydesdale and other southern districts of Scotland; but of late years, good stallions are annually sent north without any other encouragement than is afforded by the number of mares they obtain. A few are bred and kept in the country, but they are generally of inferior stamp.

On well-regulated farms, where the working stock are kept in full employment, it is usual that the ploughmen or carters do little other work than that in which their horses are engaged. All other work is performed by laborers, either by the day or by the job; the latter, in all cases where the nature of the work admits of it, being the preferable mode of employing them.

Method of working and feeding the horses.—In the spring and summer months the horses are worked ten hours per diem. The ploughmen are in the stable a little after four o'clock, A.M., to clean it out and to dress and feed their horses. They are ready to start at five; between seven and eight their breakfast, consisting of porridge and milk, is sent to the field, and after a few minutes, they are again in motion. At ten the horses are unyoked, and remain in the stable until two, when they again start for the afternoon yoking, which lasts until seven.

These hours of working are considered the best, as the horses are at rest and feeding during the heat of the day. In the interval, the ploughmen, by turns, cut clover or tares for the horses, which are carted home by a supernumerary horse that is generally kept for that and other purposes. During hay-time and harvest, or when the corn is carrying, no specified hours of working the horses are kept. In winter, when the weather admits of it, the horses are in the yoke, except an hour and a half in the middle of the day, as long as there is daylight.

The mode of feeding the horses varies according to the ideas of the farmers, but the general method is as follows. During the spring months they get one feed of oats in the morning at ten o'clock; when they come in to the stable they get a mash of boiled light grain and turnips. Before they start again at two, another feed of oats is given, and when they cease working at seven the mash is repeated. Some farmers substitute Swedish or yellow turnips for the mash of boiled grain, which is found equally to answer the purpose of keeping the horses fresh, and in a good working state.

In summer, when the horses are fed on cut clover or tares, it is not usual to give them oats, as unless they are bruised, a practice not sufficiently attended to, it is not supposed they could be much benefitted by them. In the winter months the horses get one feed of oats in the morning, and either mashes or raw Swedes in the forenoon. At eight, P.M., they are dressed and littered, and get a repetition of the mash. When there is much carting, as in driving lime, &c., the quantity of oats is increased. Hay and bean-straw form the rest of the food; and as there is little demand for the former, it is probable the horses get a larger proportion of it than they would otherwise obtain. Hay or straw-cutting does not prevail here as in England.

General remarks.—Improvements, such as practised in the south of Scotland, commenced in this country about the beginning of the nineteenth century, previous to which period judicious management was followed only by the more enlightened proprietors on their home farms. A few of the respectable native farmers studied agriculture in the improved counties in the south of Scotland, and the example which they showed in the improvement of their farms was gradually followed by their neighbors.

The rent of lands in the southern districts having considerably advanced at this period, induced farmers from these quarters to look to this country. The proprietors being sensible of the advantage that might be expected from the example which they would set to their other tenanty, granted leases considered at the time mutually beneficial in regard to enclosures, &c. These men immediately commenced the improved system of fallowing and sowing turnips, &c., and brought with them superior implements of husbandry. Although not uniform in their success, from the circumstance of their taking farms of an extent beyond their capital, by which a few became bankrupt, the native farmers saw the success of a portion of them and observed that their crops of wheat, beans, &c., were brought to maturity. They also perceived the great superiority of their management in having turnips for their cattle in winter, by which so much additional manure, and of better quality, was produced, and the cattle kept in a growing, healthful state, instead of being, as by their own system, kept barely alive during the winter months.

The improved mode of farming having gradually extended to the larger native tacksmen, the smaller tenants, and even the crofters, took the hint, and at this period (1831) a crofter who only pays a rent of five pounds has his patches of wheat and turnips.

The opening of the country by the Caledonian canal has materially contributed to its improvement; as, independantly of what may be expected from it for the general purposes of commerce, it affords the means of transporting the wheat of this district and of Morayshire, to the Liverpool market,

which of late years has been the principal outlet for that grain. This arises from the circumstance that, from the dry nature of our climate, better wheat is raised than in the west of England and Ireland. The voyages through the canal are, however, frequently tedious, as the winds, confined by the mountains, generally blow from either end, and often for long periods. This can be obviated by the application of steam, and after the very large expediture on this great national work, the expense of this power seems quite trifling, compared with the advantages to the navigation of the canal. By the aid of government, and under the direction of parliamentary commissioners, extensive lines of excellent roads and good harbors have been constructed. Another important improvement is on the eve of being set on foot, namely, the establishing of steam-boats for the purpose of carrying fat cattle and sheep to the English and southern Scottish markets. The benefit of this conveyance must be very sensibly felt, as the loss of weight and other casualties which fat stock experience in their tedious land journey at an early period of the year, and when food is often difficult to be procured on the road, very much lessen the profits of the feeder. The greater expense per head which the transport by steam must occasion, will, it is thought, be more than counterbalanced by the superior condition of the animals on arriving at market.

Character of the peasantry.—Like our Scottish peasantry in general, the inhabitants of this country may be said to be religious; are of sober, industrious, and peaceable habits; obedient and respectful to their superiors; and are willing to be instructed in any thing connected with their occupation by which they can make themselves more useful.

REMARKABLE GROWTH OF MORUS MULTICAULIS ON A SOIL ALMOST PURELY CALCAREOUS.

Capt. Jacob Houseman, Present.

Indian Key, T. F., Nov. 14, 1839.

Sir—The Editor of the Farmers' Register, at Petersburg Va., desires to obtain facts concerning the morus multicaulis of perpetual growth on the Florida Keys. As you are the oldest accidental introducer of the Manilla mulberry on this arid calcareous rock, I beg you to communicate any facts accidentally observed by you in relation to the original trees and to their recent progeny.

Very respectfully,
Your obedient servant,
Henry Perrine,
Superintendent of the T. F. C.

Dr. Perrine,

Indian Key, Nov. 14, 1839.

Dear Sir—Agreeable to your request for the history of my morus multicaulis, I say that I ordered at New York, a lot of plants, (the invoice of which is dated 28th February 1834,) consisting of apple, peach, plum and mulberry trees, which were set out as soon as they arrived at this islet. I did not know what kind of mulberry were the two trees, but I dug a hole in the limestone rock and planted them, where they grew very thrifiily. The next year they bore fruit abundantly, when I trimmed them and cut off a cart-load of branches and sprouts, and hove them away, not knowing that they would grow by sticking them in the ground. As the trees were in the way, I dug them up and transplanted them, but one died from the misconduct of the negroes. I however, continued to trim the branches of the remaining tree from three to four times a year, and still continued to throw them away until about a year ago, when I learned from Mr. Howe that by cutting off the limbs, and cutting them in short pieces and by sticking them in the ground they would grow. I then planted 20 cuttings to try them, and now the bodies of some are three inches diameter, and from 12 to 15 feet high. The great growth of these plants and the great stories of the morus multicaulis, was the reason why some leisure days in the last summer and fall I stuck in the ground more than ten thousand cuttings of the new branches, all which are now from two to three feet high, well covered with large leaves. The soil is nothing but a shelly kind of gravel and sand, not more than from one to two feet deep to the solid coral rock.

Your humble servant,
Jacob Houseman.

To Charles Howe, esq., Present.

Indian Key, T. F., Nov. 14, 1839.

Sir—The Editor of the Farmers' Register, of Virginia, is desirous to acquire facts concerning the growth of the morus multicaulis on the Florida keys. As you are the oldest practical propagator of the Manilla mulberry on this coral rock, you are hence respectfully requested to communicate any important facts from your immediate personal observations in this entirely tropical climate and on the entirely calcareous soil.

Very respectfully,
Your ob't. servant.
Henry Perrine.

To Dr. H. Perrine, Present.

Indian Key, Nov. 16, 1839.

Sir—In reply to your request of yesterday, I briefly state that my personal observations on this little island have satisfied me of the important facts that the morus multicaulis is here in the very best section of the United States for its profitable propagation; because the Manilla mulberry is here an evergreen tree, which bears leaves the whole year round, and because it therefore does furnish food for silk worms and does furnish buds for planting on every day of every year. Mr. Baker of Charleston, S. C. sent me nine plants of the morus multicaulis, about two feet high, which I planted on the 23rd December, 1836; and on the 2nd January 1837, the leaves had become the size of a dollar. On the 12th January 1837 I hatched 50 eggs of silk worms, and fed them on the young leaves of said plants, by picking all the leaves on each plant in succession; and when the ninth plant was stripped, the first plant was again covered with leaves; on the 22d February, 1837, I sent to Charleston, S. C. several cocoons spun by those worms fed on those leaves; that is in two months the leaves were grown, the worms were fed, and the cocoons were spun, in the worst days of a northern winter. In relation to the propagation of the Manilla mulberry, I will briefly state that I have planted cuttings and transplant-

ed trees at any season of the year, whenever a rain fell, and I was at leisure at home. I have memoranda of planting in October, November, December, January, March, April, June, August and September. Those cuttings planted on the 24th April last, are now 5 to 6 feet high, and those planted on the 20th September from 10 to 15 inches high. Considering the want of vegetable mould and of every earth except limestone, and then comparing the small size of my lot with the great number of trees huddled together in the lot, it does seem wonderful that any one should grow at all. Nevertheless, you daily see that they are all flourishing with the greatest vigor and luxuriance in the continual reproduction of their enormous leaves.

Very respectfully,
Your obd't. servant,
CHARLES HOWE.

To the Editor of the Farmers' Register.

I send you the preceding copies of my correspondence concerning the morus multicaulis with the only persons on this islet who possess any plants of the Manilla mulberry. You know that this islet embraces only twelve acres of land, and is inhabited by only six families including my own. Capt. Houseman is the principal proprietor of the island, Charles Howe, esq. is the postmaster and inspector of the customs, and their families include the only persons who have resided on this islet during the last ten years. You will perceive that neither of them has yet adopted the prolific practice of propagating with single buds, as both of them are apparently satisfied that the value of the leaves for fodder for cows is, at the least, equal to their value for food for worms, and that the conversion of those leaves into milk by milch cows is a much speedier, safer and easier process, than the conversion of those leaves into silk, by silk-worms. Indeed, neither Capt. Houseman nor Mr. Howe, has the leisure or the disposition to multiply the Manilla mulberry to the greatest possible extent, in the least possible time; and have not hence derived any pecuniary gain from the superlative superiority of South Florida, for the profitable propagation of the morus multicaulis and for the continual production of raw silk.

Very respectfully,
Your obd't. servant,
HENRY PERRINE.

Indian Key, T. F., Nov. 16th, 1839.

P. S.—As regards the moveable material here called soil, I do not believe that when equally distributed over the whole island, it would make an average depth of six inches to the solid rock.

H. P.

[We had long ago observed the peculiar fitness of calcareous soils to favor the growth of mulberry trees; and besides the economical value of that fact, it was the more interesting to us because of our investigations and observations previously made in regard to sundry other trees and plants which have either a marked preference for, or as marked an aversion to, calcareous soils. When therefore we heard, from Dr. Perrine, that morus multicaulis plants were growing on the almost pure calcareous soil of Indian Key, a mere disintegrating coral rock, we felt curious to be more fully informed as to the degree of congeniality between this tree and a soil so unfavorable to most other trees, and indeed to vegetation in general; and our inquiry has elicited the remarkable and interesting facts presented in the foregoing correspondence.

The remarkable power of growth of this tree on a soil so nearly approaching to sterility, on account of its being so nearly a pure carbonate of lime—and which will soon become entirely steril by tillage, without due care for giving and retaining in it vegetable matter—is of far more importance than merely to feed silk worms, (important as we deem that object,) or to produce trees for sale. Supposing not a cent to be derived from either of these sources, the discovery of the peculiar aptitude of this tree to grow on such soil is alone equal to double its value for other purposes. For it will give a luxuriant and shading forest growth on what would be otherwise a burning and arid region, and which otherwise, after being exhausted by tillage of its little stock of vegetable matter, would become not only destitute of fertility, but of grass and of trees, and consequently of moisture. The growth of this tree offers, directly, abundance of cattle-food, and of wood for fuel, and perhaps timber for many purposes; and indirectly, it will aid the product of every other crop, by the cover of trees producing vegetable food, and also by inviting and retaining the moisture of the air. We may be visionary in this opinion; but we do certainly and fully believe, that the two facts so recently known—the nature of this soil, and its fitness for producing mulberry trees—if properly appreciated and applied, may make all the difference between a productive and delightful agricultural region, and a naked, parched, and unimproveable and scarcely habitable desert.—ED. FAR. REG.]

CAPITAL INVESTED IN AGRICULTURE BOTH SAFE AND PROFITABLE.

From the Maine Farmer.

At the present time when there is much derangement in commercial concerns, and when the world seems filled to a surfeit, with all kinds of stocks, it may not be improper to pause a moment, look around us and see what sort of investments have stood the tests which the various circumstances of a political and commercial nature have brought to bear upon them. Is that portion of capital which is invested in the thousand and one speculations of the day, as safe and as productive as the holders desire? Do the banks exhibit in their returns, such an enormous dividend that makes their stock so very lucrative that it is

an object to invest in them largely? We think not. If we take the whole amount of bank dividends in this state and average them upon the amount of capital stock, they will hardly amount to four per cent. Look at the various other kinds of fancy or other stock, which have swallowed up so much of the capital of our own citizens—very few of them yield six per cent. Again, look at the active commercial part of the community. Group them all together and sum up the profits and the losses, and average them among the individuals, and will their profits be so great and so splendid that it would be cause of envying the proprietors? So unsettled has been business, and so full of uncertainty and fluctuation, that hundreds and thousands, who have entered the field of commercial enterprise with some little capital—the fruits of their own or their fathers' industry—are now in fact deeply insolvent, and in truth pennyless, however well they may manage in concealing it by the use of other people's property.

Well, how is it with capital invested in agriculture? How is it with funds invested in the soil and the improvements of a well managed farm? Are they any more productive, or are they, in fact as far in the back ground as the votary of commercial speculation would fain make the world believe? We believe that if we take the amount of capital invested in any well conducted farm, and carefully calculate the net proceeds, it will be found that it is more productive than most of the investments of the present day. Let us take for instance any particular crop. The oat crop is as fair a one as any to calculate upon.

Let us first estimate the amount of capital to produce a crop from an acre; and first we will give what in this state may be considered a large price, especially if we were to purchase a whole farm at the rate, we will give $50 for the acre,

	$50 00
Ploughing,	2 00
Seed,	1 25
Harrowing in,	1 00
Interest of cost of acre for one year,	3 00
	$57 25

We will give the straw for harvesting and thrashing, and we have now invested fifty-seven dollars and twenty five cents.

We will suppose that you get thirty bushels of oats, and that is a crop hardly worth bragging about. Our friend Ford, of Gray, gets 66 bushels per acre, but we will take thirty bushels, only *thirty*, and will sell them for less than we gave in the spring for seed. We will sell them for 37½ cents per bushel, which will amount to $11 25. Now eleven dollars and twenty-five cents is the interest of $187 50, at 6 per cent, or in other words, is more than nineteen per cent upon the interest of capital invested, including purchase money and all. But as you have the acre still on hand, deduct if you please, the $50 which you gave, and the expenses will then amount to $7 25. This then is the actual floating or circulating capital required to produce your acre of oats, including rent or interest of purchase money, and the nett income. $11 25, is about 155 per cent. *Fiddlestick*, exclaims neighbor Scrubard—now this is all humbug—real book farming. Any body can get rich on a piece of paper. If money can be made so easy by farming why *ain't* I and every one who have been farming all our days as rich as mud? *I don't believe nothing on't.*

Well neighbor, put down your *goadstick* and let us enquire into it. How large a farm have you? One hundred acres. What did you give for it? $2000, that is $20 per acre. The interest of this is $120. Well then I have to pay about $20 in taxes, that makes $140, then I have to hire help, two men six months in a year, and work hard myself the year round. Well we will give you all twelve dollars per month, that will be $144 for yourself and $144 for your men; equal to $288, which added to the interest and taxes, $140, makes $428 outsets or circulating capital. Then there is the interest on the cost and wear and tear of tools, you have reckoned. Well we will give you $72 to pay for that, which is in the interest of more than a thousand dollars for your tools and implements, but we will give you that sum, which added to the $428 will swell it up to $500. Now how in the world do you pay this $500 but off of your farm?—mind you, this $500 is what you invest, year after year—it is the interest of your first investment of $2000 for your farm, payment to yourself and men for labor, &c. &c. Now how much land do you cultivate and how much hay do you cut? I cultivate twenty-five acres, and mow twenty-five—I have twenty-five in pasture and twenty-five in woodland.

Produce.

2 acres of Indian corn,	50	bush.	worth	$50 00
4 " potatoes (light crop)	1000	"	"	200 00
5 " oats	150	"	"	56 25
6 " barley	120	"	"	80 40
5 " wheat (light crop)	50	"	"	50 00
3 " rye	60	"	"	60 00
40 tons of hay worth $6 per ton				240 00
Total				$736 65

Thus the whole amount of your crops are worth $736 65, making due allowance for rust in your potatoes, and weevil in your wheat, and not rating the other very high, either in amount per acre or at a high valuation in the market. We have charged you nothing for seed, and although we have allowed you full wages while sowing, cultivating and harvesting, we have said nothing in regard to the value of the straw, husks, &c. You have thus realized $236 65 more than a return of your circulating capital, which is more than 47 per cent. Ah, well—this looks might well on a paper, but it isn't *cash*. The merchant and the broker have the *clean cash*, while we poor farmers have to go without the rhino, if our barns and cellars are ever so full. What then? it is what will purchase cash—it is property, it is substantial wealth. If you were under the necessity of buying this amount of produce in the markets you would find that it was worth something. Scrubard looked somewhat puzzled. It is true, said he, it would cost a good deal to buy what even a poor farmer may raise; but after all where is one that does as well as you have figured out, there are ten who run astern and finally come out of the little *eend* of the horn. Grant yon that neighbor, and what is the reason of it? They do not invest capital enough in their business, either because they have not got it, or because they are too penurious. They may cultivate a few acres well, which yields them a good profit, while they

suffer nine tenths of the rest of their farms to lie idle, and the interest on the cost of these acres eats up the profit of the few that they do cultivate. We have said nothing of the income from your pasture or your woodland.

If the position here taken be true, and we challenge scrutiny, and beg to be put right if we are wrong; how much better would it be if those who are now farmers by profession would, if able, devote more capital to their business instead of diverting it as many do into other channels and engaging too largely in other business.

Any one who rides through the state cannot but notice the thousands of unimproved acres on either hand. How much better would it be if more of our young men would take hold of the business of farming instead of aspiring to a life of *apparent* ease in commercial pursuits. It is true that the farmers crops are sometimes cut off; but not oftener than are the hopes of the merchant. Mildew and hail and rain, and hurricanes sometimes destroy the fruits of the earth; but not oftener than do the elements work destruction upon the ships of the importer.

Life is full of vicissitudes, and risks and changes in whatever place or pursuit you can engage, but, taking every view we can of the whole, we are convinced that capital invested in agriculture is most safe and profitable.

WINTER BUTTER.

From the Genesee Farmer.

The best and the richest butter of the year is that made after the vegetation of the year is developed in May and June, as the food is sweeter then than any other time. But notwithstanding all the care that can be used, in ordinary cases, such butter cannot be preserved through the summer, in a state fit for winter's use. There can be no doubt that packed in jars perfectly close, entirely freed from buttermilk or extraneous matters, salted in the just proportion with pure salt, and kept at a temperature below 50°, the butter of June would be in perfection in January. The combination of favorable circumstances, however, can be rarely obtained, and farmers, as well as others, who did not keep milch cows for the purpose of supplying them with milk and butter through the winter, must rely on butter packed in autumn for their winter supply. Too many farmers, we think, are in the habit of delaying the providing their stock of butter too late in the season. The reasons for this are, it does not require as much care in making and working the butter to make it keep well, as it would if made earlier in the season; and if made late, and after a low temperature has arrived, packing may be dispensed with, or at least, may be performed very imperfectly. But such late made butter has several disadvantages. It is usually made from vegetation that has been more or less frost bitten, and therefore does not produce milk of the richness and purity which is essential to the making of the best butter. Further, as the grasses decay, range of feeding by the animals is increased, and vegetation, which at other times would be refused by the cows, is now eaten with avidity by them. If the farmer has a good supply of pumpkins or carrots which he can feed to his cows, he can make first rate butter at any time; but unless he is so provided, his stock of winter butter should be put down before his cows are driven to subsist on food that will be sure to deteriorate the article. The tops of almost any of the cultivated roots produce a greater effect on the butter than the roots themselves. Thus when we have fed out the tops of the ruta baga to our cows, the effect on butter has been very distinct and disagreeable, while in that from the cows fed on the roots and hay very little alteration of taste was perceptible. Such butter should not be used for keeping, as it never grows better. Too much of the butter offered in the markets of this country is only fit for the soap-makers, and to them it should be consigned.

IMPROVED METHOD OF TRAINING RASPBERRIES.

From the Floricultural Cabinet.

Cut out all the weakest shoots, so as to leave only about six on a stool; then twist the point of one shoot from one stool with one shoot from the stool adjoining, so as to form an arch. Do the same with two other shoots of each plant, so as to form a triple arch between plant and plant, in the direction of the rows, all through the plantations; the space between the rows being left open as usual. The plants should be six feet apart every way. The fruit produced by the trained canes will be fully exposed to the direct influence of the sun and to the air, and there will be more room for the suckers.

APPLE MOLASSES.

From the Ohio Farmer.

There is many a good housewife, who has more faith in her own experience, than in the science of chemistry, that knows not the value of apple molasses; but still believes it to be the same kind of tart, smoky, worthless stuff, that has from time immemorial, been made by boiling down cider. It is not within my province, at this time, to attempt to convince such that there is a chemical difference; though it might easily be shown, that they are almost as different as sugar and vinegar. I would, however, invite them to lay aside their cider this year, and try the plan of boiling down the juice of the apple that has not been exposed to the air by grinding and pressing.

"Last autumn I placed a number of bushels of Wetherill's sweeting apples in two large brass kettles, with water just sufficient to steam them; when they boiled soft, I turned them into a new splinter basket, containing some straw, and placed on them a barrel head, and a heavy weight. The juice was caught in a tub. This was repeated until I had juice enough to fill the kettles, when I commenced boiling it down, and attended to it strictly, frequently skimming it, till it became of the consistency of cane molasses. The native acids of the fruit imparted a peculiar flavor, otherwise it could hardly be distinguished from the syrup of the cane. It was used in my family for making sweetmeats, for sweetening pies, for dressing on

puddings and griddle cakes, and a variety of other purposes. The cost of making it is very trifling, and the means are within the reach of every farmer.

ERASURES OF SUBSCRIPTIONS FOR NON-PAYMENT.

Subscribers in arrear are requested to read the third rule of the editorial convention. (See the rules annexed to the Conditions, on the cover, as well as in many earlier publications.) This rule will, at the close of this volume, be for the third time strictly enforced, and as it will be also hereafter at the end of every succeeding volume. Each enforcement of this rule has swept from our list from one to three hundred "*patrons*" of this journal, and but few of whom would have been discontinued by their own order. But our *pledge*, and other cogent reasons require that the rule shall be truly and fully complied with; and it *shall* be done even if at the total loss of all such subscribers, of their favor, and of their existing debts.

The usual "credit system" of periodical publications, or rather *non-paying* system, if not thus or in some way checked, is enough to break down even the most popular and extensively circulated journals. Indeed the more extensive and widely diffused circulation causes the greater proportional loss. We have already adopted measures (in the present conditions of publication) to restrain this enormous abuse, and which measures, if generally availed of, would be alike beneficial to the subscribers and to the publisher. And if the effort is appreciated and properly seconded by the real supporters of the Farmers' Register, the "cash system" will be adopted without exception hereafter.

MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The suspension of specie payments in this country caused less alarm in Europe than we had apprehended. American stocks had previously declined to so low a rate as to put a stop to sales. The Bank of England was obtaining considerable reinforcements of specie, and no apprehensions of suspension by her appear to have been entertained. The average prices of grain were lower, and the duty had consequently increased; but this is ascribed more to the inferiority than to the superfluity of the harvest.

In this country every article of domestic produce has declined in price during the present month. Tobacco $5\frac{1}{2}$ to $6 in the large markets, and wheat $1 10 to $1 15, at which rates extensive shipments have been made. Cotton in the great southern ports has fallen to 7 to 10 cents; and the threats of monopolizing and witholding it from market are not likely to be executed.

Supplies of new tobacco have been large this month, and the general range of sales $3\frac{1}{4}$ to $7\frac{1}{2}$.

Exchange on New York may be quoted 8 per cent. premium, and on London 17 to 18.

Stocks of all kinds continue depressed. The banks have been temporarily relieved from the penalties incurred by suspension, but money continues scarce. The want of small change is a great and growing evil, but individuals do not, as on a former occasion, issue small bills. X.

December 21, 1839.

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